

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) and
THE DOW CHEMICAL COMPANY (Dow)

TRI-CITIES DIOXIN COMMUNITY MEETING

February 9, 2006

6:30 - 9:00 p.m.

Horizons Center, 6200 State Street, Saginaw

1 -o0o-

2 CHUCK NELSON: Good evening. I'm going to
3 do my utmost to start on time, because we have a very
4 full agenda tonight, and I want to maximize the
5 opportunity folks have to ask questions, make comments
6 during the end of the meeting, have the discussion
7 that we promised that we would do.

8 I would ask you to turn your attention first to
9 the ground rules. They're on the back of your agenda.
10 My name is Chuck Nelson by the way. I had the
11 privilege to meet many of you at these meetings in the
12 last year and a half or so. I appreciate the
13 opportunity to be back with you again tonight. I'm
14 tonight's facilitator. At my day job, I work at
15 Michigan State University in the Department of
16 Community, Agriculture, Recreation and Resource
17 Studies.

18 We will do our utmost to stay on the time
19 schedule tonight. I would genuinely appreciate if we
20 would show respect to each other. So when someone has
21 the microphone, let them say their peace, ask their
22 question, make their comment. I would also like to
23 encourage you to do things in a timely manner, so that
24 every other person that has an interest in making a
25 comment or asking a question gets their opportunity.

1 I want to note that the folks from Dow and DEQ
2 will both be here for a half an hour after the
3 meeting. If you have very detailed in-depth questions
4 about a specific site, place, procedure, that there is
5 not sufficient time to answer and still get to all the
6 other folks who have questions or general comments,
7 please, follow up with them.

8 Also, you are able to comment to the DEQ in
9 writing, either regular mail or on the website. I
10 would appreciate that we would listen carefully to
11 what each other has to say, so we respect each other's
12 opinions and comments. We are doing our utmost that
13 everybody gets their opportunity here.

14 Now some people asked last meeting, would it be
15 possible to have a break. I realize the meeting is
16 now two and a half hours. I would be happy to hear if
17 any of you believe that we need a break in the middle
18 or just let people go in and out as they please. What
19 are your thoughts? Does anybody have any strong
20 preference one way or the other? We don't have a
21 break in the agenda. If you're okay with that, we're
22 going to stick with it the way it's written.

23 I would note then if we go to the agenda on the
24 front there is one change. The Priority 2 interim
25 action presentation by Dow will follow the summary of

1 the remedial investigation workplan. The Priority 2
2 then will go right down below the summary of the
3 remedial investigation workplan. It is a much shorter
4 item. We want to be sure that we spend the maximum
5 time on getting you the information about the
6 workplan.

7 At 8:00, we will go to questions and discussion.
8 There will be an opportunity for questions following
9 the DEQ's short presentation of the GLNPO data and
10 some other things. Please, just clarification
11 questions there. Let's make sure we can get through
12 the big part of the data and information we have
13 tonight, so then we can ask questions with all the
14 information out in front of us after 8:00, the more
15 detailed questions and comments, okay.

16 So with that, let's get started. Al is going to
17 lead off here for DEQ, and Al, you'll introduce the
18 DEQ folks who are in the room who would be available
19 afterwards for questions.

20 MR. AL TAYLOR: Sure. Good evening. My
21 name is Al Taylor. I'm a geologist working on the Dow
22 chemical hazardous waste corrective action projects.
23 I want to introduce a couple of people from the DEQ
24 real quickly: Jim Sygo, Deputy Director of the
25 Department is here; George Bruchman, Chief of the

1 Waste and Hazardous Materials Division; Steve Guda,
2 the Chief of the engineers in the hazardous waste
3 program; Terry Walkington is here, he's the leader of
4 our Saginaw Bay district office; and I'm sure I'm
5 missing some other people; Art Ostrazewski, he's a
6 colleague working on the GLNPO grant, and I will toss
7 any questions out of my depth to him.

8 We also have people from the Department of
9 Community Health; Brendan Boyle and Steve Walter; and
10 then Cheryl Howe has come in off of leave to join us
11 here tonight as well. Cheryl is in the back row there
12 somewhere.

13 I'm going to try to zip through this. If you
14 were at the last meeting that we had, the first
15 community meeting in November, you'll remember that we
16 had a Google Earth presentation of the data that we
17 had to date. This is agency data, the Department of
18 Environmental Quality, EPA and the Army Corps of
19 Engineer data.

20 At that time the DEQ committed to coming back at
21 this meeting and providing an update on where we are
22 with that data. We have been in the process of
23 implementing a grant that we received from U.S. EPA,
24 the Great Lakes National Program Office, and this
25 grant was to investigate river sediments and

1 floodplain soils in the Shiawassee River and the
2 Saginaw River.

3 And first of all, the Shiawassee River, this was
4 a quite extensive -- the Shiawassee River is quite
5 large, and the study began up in Howell and continued
6 down the confluence of the Saginaw River. It's
7 approximately 40 miles. We have the Saginaw River,
8 which is the upper Saginaw, the mid Saginaw, lower
9 Saginaw and the Bay, East Bay and West Bay, and the
10 number of samples that we collected during the study,
11 a little over 200 samples from 116 locations. 115
12 floodplain samples, most of them on the Saginaw River,
13 88 percent on the Saginaw River, 10 percent on the
14 Bay, and 22 percent on the Shiawassee. We got 97
15 sediment samples, about a third of those from the
16 Shiawassee, about half from the Saginaw, about
17 20 percent from the Bay.

18 And just start right here, this is the Shiawassee
19 River beginning up in the Howell area and going down
20 to the confluence down here with the Saginaw River.

21 What this data is showing us -- this is both
22 floodplain and sediment data shown together -- is
23 quite low. It's typically less than ten parts per
24 trillion. It's what we've been typically upstream of
25 Midland, quite low concentration. It was important to

1 look at this branch of watershed to determine if
2 contamination, PCB's, dioxins and furans, were
3 migrating into the Saginaw River from this major trunk
4 in the watershed. What we were seeing is that's
5 really not the case.

6 Now this is a -- right now we're starting -- this
7 is the confluence of the Tittabawassee River and the
8 Shiawassee River, the beginning of the Saginaw River,
9 and then out here is Saginaw Bay. Here is Saginaw,
10 Bay City down in here. This is the pre-2004 data that
11 we have on the sediments in the Saginaw River.

12 Just to give you a quick primer here, the red
13 bars are greater than 1,000 parts per trillion TEQ.
14 Yellow is 90 to 1,000 parts per trillion TEQ, and
15 green is less than 90 TEQ. So in this case, we're
16 looking at sediments, and this is pre and this is
17 post. So you can get an idea of the number of samples
18 that were collected and also the concentrations that
19 we have seen.

20 The important thing I want to note here is these
21 red bars here are capped out at 5,000 parts per
22 trillion. If we put them actually to scale, basically
23 one -- and the way this works is one part per trillion
24 is equal to 1 foot of altitude in height. These are
25 16,000, so this bar would be about two times the size.

1 We capped these out at about 5,000. This gives you an
2 idea of the sediment data, and we can toggle back here
3 for just a second, give you an idea of before, after.

4 So we've had a good opportunity -- we've filled
5 in a lot of the geographical gaps along the Saginaw
6 River and out to the Saginaw Bay, and what we see is
7 we do see some higher elevations kind of at the -- if
8 you're familiar with where the Sixth Street turning
9 basin is, in that area is where we're seeing some of
10 the highest concentrations, kind of in the mid to
11 upper, kind of at the top of the navigational dredge
12 project that's being proposed.

13 And then we also see a couple of higher ones out
14 here in the Bay, and this here is of particular
15 interest. That's the old river channel. The
16 navigation channel goes out this way, which is
17 dredged. The old river channel goes that way.

18 Then we're going to look at floodplain data.
19 This is pre-2004. Here is not a lot of data. This
20 big red bar right here is from DEQ data that was
21 collected back in 2000 and 2001. That's the old GM
22 plant that had one of the initial kind of catalysts
23 for this investigation, but really you can see there's
24 not a lot of data along the river.

25 So post, we have a lot of data points. We got

1 one red one down here, which is greater than 1,000.
2 We have a couple of yellows, but typically fairly low.
3 The fact that you can't see them is probably a pretty
4 good thing.

5 Now looking at this in total, this is the
6 Tittabawassee River. This is Dow Chemical up here.
7 This is going down the Tittabawassee River, turning
8 the corner and heading out to the Bay. This is
9 pre-2004. Keep an eye on this down here. This is the
10 major focus of our study area, and this is the data
11 filled in, and it shows pretty well that in the upper
12 part of the Saginaw River, in particular, we have a
13 lot of quite high concentrations. We have a lot of
14 yellow in here, which means that they're between 90
15 and 1,000, but still quite high, and in the Bay, we
16 have some red as well.

17 So the conclusions, quickly because I'm on a
18 time, we have some preliminary conclusions. The
19 Shiawassee is not a significant contributor of dioxins
20 and furans to the Saginaw River. That was an
21 important conclusion that we had to get to that. This
22 is kind of a good news piece or story here. The
23 Saginaw River floodplain does not appear to be as
24 contaminated as the Tittabawassee River floodplain.
25 What we're seeing typically is concentrations on the

1 Saginaw River floodplain -- and most of these samples
2 were collected very close to the river -- are
3 typically less than 90 parts per trillion. We have
4 some that exceed 90, but they're not -- we're not
5 seeing, you know, the thousand plus parts per trillion
6 concentration routinely, like you see on the
7 Tittabawassee River floodplain. So that is a good
8 news story from this particular investigation.

9 The highest TEQ concentrations, up to 16,000,
10 were found in the upper Saginaw River sediments in the
11 non-navigational area up into in here. I guess one
12 thing that I forgot to mention, that I should, is that
13 the focus of this GLNPO data was to collect samples
14 outside the navigation channel. Most of the data that
15 we had before was within the navigation channel, and
16 we wanted to see if we're seeing a major difference
17 between basically sediments that have been dredged on
18 a fairly routine basis and sediments that are pretty
19 much just deposited and left there and/or probably
20 sloughing off into the navigation channel.

21 And finally, we did find some higher levels,
22 greater than 1,000 in a couple of cases, in the lower
23 Saginaw River and in the western portion of the
24 Saginaw Bay at depth. So we have found some fairly
25 high concentrations out in the Bay.

1 Next steps, we have to get our report finished
2 and get it to EPA this spring. We need to incorporate
3 Dow studies and other agency data into Google Earth.
4 Dow does have a study on the upper Saginaw River. The
5 data is not included in here. Our plan is to include
6 that data after we finish reviewing the report, and I
7 believe Dow is also going to be conducting additional
8 work in the upper Saginaw River. We're due a workplan
9 in March.

10 And if you have any questions, you can contact
11 me. This presentation is available on the DEQ
12 website. You can go over there and look at it in
13 detail and take your time with it. Thank you.

14 JIM SYGO: Jim Sygo. Good evening,
15 everybody, and welcome to the meeting. One of the
16 aspects that we were going to report on, on a regular
17 basis, was also the alternative dispute resolution
18 process and mediation that we've been going through
19 with the trustees that have been assembled, as well as
20 Dow.

21 Since the last meeting -- we have had several
22 meetings. For the most part, about all we have to
23 report at this time is we did spend a significant
24 amount of time on January 18th where we met in a
25 nonconfidential meeting where Dow at that time and

1 their consultants presented a lot of the information
2 that will also be presented tonight to the agencies
3 and the trustees with the interest of getting the
4 first glimpse of the details of the RI workplan.

5 So with that, there haven't been any other
6 meetings since the 18th scheduled. A lot of emphasis
7 has been placed on developing the agendas for this
8 meeting and moving forward with some of the approvals
9 and the review of the IR itself. We will be reporting
10 to you on a regular basis. At our next meeting, we'll
11 try to have another update.

12 Again I think most of the work that we've been
13 doing is really been dealing with evaluating data and
14 also looking at how we're going to assemble data so
15 that we can collectively utilize it effectively
16 together. Thank you.

17 CHUCK NELSON: Are there any questions for
18 the DEQ folks about the presentations you've seen thus
19 far?

20 AUDIENCE MEMBER: John Woodsky with the
21 Michigan Conservations Club. Al, on your determining
22 where the higher levels are either on the shoreline
23 and/or in the channels, what results did you find in
24 that?

25 MR. AL TAYLOR: We didn't see a big

1 statistical difference between them. The thing that
2 was most interesting I think that we found was that
3 the highest concentrations that we saw typically were
4 in the upper part of the samples that we collected in
5 the Saginaw, so that surficial sand, which was
6 counterintuitive to us. We didn't expect that getting
7 into that upper sand layer was where we saw the
8 highest concentrations.

9 AUDIENCE MEMBER: Thank you.

10 CHUCK NELSON: I saw a couple of other
11 questions. Sir, go ahead.

12 AUDIENCE MEMBER: I don't think I need the
13 mike, Al, but I shall use it. I guess the question I
14 had, in your pre and post testing samples, were they
15 all at the same levels or comparatively at the same
16 levels, or how did you determine pre and post testing
17 samples?

18 MR. AL TAYLOR: The pretesting was data that
19 we already had from studies done by the Army Corps of
20 Engineers and some samples that have been collected by
21 the MDEQ. The post data basically filled in the
22 geographic gaps between those data. So we tried to
23 get a good geographic distribution of sample locations
24 in the studies that were collected after 2004. We're
25 trying to get a nice comprehensive picture of what was

1 in the river and in the Bay given the limitations of
2 our budget.

3 AUDIENCE MEMBER: Well, I was wondering if
4 you could make those available, because the reality is
5 as a training statistical engineer I'd like to see
6 some sort of applicable statistics applied here.

7 MR. AL TAYLOR: All of the data will be
8 available publicly on the website when we submit our
9 final report to U.S. EPA, but, yes, that data will be
10 available, and you can go nuts with the stats on it.
11 I know we have been.

12 AUDIENCE MEMBER: Thank you.

13 CHUCK NELSON: I saw one other question over
14 here.

15 AUDIENCE MEMBER: He answered it. Thank
16 you.

17 CHUCK NELSON: Very good.

18 AUDIENCE MEMBER: May I ask one more
19 question, please. Al, on the lower Saginaw where the
20 high concentrations are in red, were those areas
21 impacted by previous dredging required by GM and
22 others municipals and so on, would those change those
23 numbers or would they affect those numbers on
24 concentrations? Thank you.

25 MR. AL TAYLOR: Possibly, they could. One

1 of the things that we've done is, we didn't talk about
2 here, but we went back this fall to some of the
3 dredging cells from the GM remediation and sampled
4 sediment that had filled back in, in those cells. The
5 thought there was that, you know, maybe this is an
6 opportunity to see how effective a sediment trap would
7 be on the river, and the data is not presented here,
8 but what we did find is that the sediment that did
9 fill in there did not contain appreciable PCB's but
10 did contain pretty high levels of dioxins and furans.

11 So we were kind of interested in that
12 determination. The dredging that GM did apparently
13 seemed to be pretty effective. We haven't seen a
14 whole a lot of high levels of PCBs as part of the
15 study, and we did sample for them.

16 AUDIENCE MEMBER: Thank you.

17 AUDIENCE MEMBER: So by the looks of your
18 data, it looks like where the river has been dredged
19 there's less dioxins. I'm not familiar with where the
20 dredges spoils went that were dredged out. Where are
21 the historic spoils from the Saginaw River been
22 deposited?

23 MR. AL TAYLOR: Shelter Island is a major
24 disposal point out in the CDF out in the Bay. In
25 fact, there's an island, I don't know if you can see

1 it, it's right about in here, but there's what we call
2 a confined disposal facility out there, and that's
3 where most of the sediments that -- when they started
4 disposing of sediments in engineered facilities,
5 that's where they went. Prior to that, they kind of
6 side casted sediments out of the channel.

7 CHUCK NELSON: Okay. We'll have a chance to
8 bring up more of these issues when we get to the
9 8:00 discussion. I just want to make sure we get to
10 the workplan here. John, will you start us off from
11 the workplan and introduce the folks from Dow here?

12 While John is getting setup, let me remind you,
13 and thank you for reminding me, the website where you
14 can find the GLNPO data is right on your agenda. If
15 you want to go see it, it's all there. It's very
16 easy. It's two clicks. I went to it today.

17 JOHN MUSSER: Good evening, everyone.
18 Thanks for your patience and welcome. We really
19 appreciate you being here and look forward to your
20 comments and questions, and we have quite a group of
21 Dow folks here, as well as our consultants, that have
22 had a significant hand in helping to develop the
23 remedial investigation workplans that we'll be talking
24 about in a bit.

25 My job is to give you a little bit of context for

1 what those plans are about, and my associate here,
2 Lauri Gorton, from CH2M Hill, one of our professional
3 consultants, will be providing you with the greater
4 detail. Fundamentally, what we're doing here tonight
5 is trying to highlight, not give you every bit and
6 piece of the data, that will come in time, but we
7 wanted to give you an orientation, if you will, to
8 what is in the remedial investigation workplans.

9 We want to discuss some of the questions that are
10 going to be answered, some of the information that
11 will be collected and how that information is intended
12 to be used. We'll also talk a bit about how we're
13 going to approach the risk assessment associated with
14 the data that's collected, and we'll talk a little bit
15 about what you can expect in terms of next steps
16 pending approval of a final workplan by DEQ.

17 I mentioned we have quite a collection of Dow
18 folks here, and I want to assure you that we have made
19 our very best effort to pull together the best experts
20 we could find to help us pull together the best work
21 product in terms of comprehensive, and we hope and
22 believe, effective remedial investigation workplan.
23 I'd like to have all of the Dow folks and our
24 consultants that are here this evening kind of stand
25 up and give people your credential and affiliation

1 with this project.

2 MS. LAURI GORTON: I'm Lauri Gorton. I'm
3 with CH2M Hill, and my field of expertise is
4 corrective action.

5 MR. JIM COLLINS: I'm Jim Collins. I'm the
6 Epidemiology Director of Dow Chemical, and we've done
7 many studies on Dow workers exposed to chlorophenols
8 and dioxins, and we're continuing to do studies on
9 those workers.

10 MR. TOM LONG: My name is Tom Long. I'm a
11 consultant with the Sapphire Group in Cleveland. I'm
12 a toxicologist by training and involved in the risk
13 assessment.

14 MR. GARY DYKE: My name is Gary Dyke. I'm
15 with CH2M Hill. I'm a geologist, and I've worked
16 extensively with Dow in the development of the RI
17 workplans and evaluation of the data.

18 MR. BRYCE LAMBERGER: I'm Bryce Lamberger.
19 I'm technical leader for the risk assessments and
20 statistics group, and I have a background in pharmacy
21 and also biostatistics.

22 MR. KEN COOPER: I'm Ken Cooper. I'm the
23 technical leader of the environmental toxicology group
24 at Dow, and we're involved in the wildlife issues.

25 MS. LISA ELDER: I'm Lisa Elder. I'm a

1 toxicologist and risk assessment assessor with the
2 Summit Toxicology Group.

3 MR. BOB DABINSKI: I'm Bob Dabinski. I'm a
4 toxicologist at Dow Chemical.

5 MS. DENISE KAY: I'm Denise Kay. I'm a
6 consultant with Entrix. I'm an environmental
7 toxicologist and I'm working on the ecological risk
8 assessment.

9 MR. MIKE CARSON: I'm Mike Carson. I'm a
10 physician at Dow and a Medical Director in Midland.

11 MS. PRISCILLA JOHNSON: Priscilla Johnson.
12 I'm an environmental engineer with Dow Chemical, and
13 I'm in charge of the Priority 1 and Priority 2 interim
14 response activities.

15 MR. BRIAN AGERS: I'm Brian Agers. I'm with
16 AKT Peerless Environmental Services in Saginaw, and
17 we're working on the interim response activities.

18 MR. DAVID GUSTOFSON: I'm David Gustofson
19 with Dow. I'm a chemical engineer in the regulatory
20 affairs group.

21 MR. JACK KLOW: Jack Klow. I'm a
22 consultant, and I don't know any of this technical
23 stuff.

24 JOHN MUSSER: I wanted you to get a chance
25 to meet these folks. I think they do represent a

1 tremendous resource, and I'm really pleased to have
2 them here tonight, because my depth of knowledge on
3 some of these matters contained in the workplans are
4 well beyond my knowledge level. So I'm looking
5 forward again, and I'm sure they are, to your
6 questions.

7 The remedial investigation will determine the
8 need for and the scope of corrective actions
9 ultimately. This is our phase for filling in the gaps
10 on the information that we already have and conducting
11 studies where we will identify various site
12 conditions, and you'll hear Lauri talk a little bit
13 about so-called preliminary site concept -- or concept
14 site models, and this is simply a picture of what we
15 have with the data that we've collected thus far.

16 It's a very preliminary look, and that's all it
17 is, but you can make some judgements from that about
18 what kinds of information you may need to fill out a
19 more comprehensive and robust picture of the
20 conditions on these various work area sites.

21 We'll also be evaluating the potential for risk
22 both in terms of humans and the environment, providing
23 information also to select appropriate remedies. This
24 is where all the rubber meets the road here, once we
25 have the full picture developed from the studies, we

1 will be able to make some good judgements, some
2 informed judgements, some judgements that are science
3 based and will be effective use of resources to
4 achieve the goal that we've said all along which is to
5 be protective of human health and the environment and
6 with a good view of not disrupting the economic
7 conditions within the communities.

8 We've got four questions that -- if you boil down
9 the remedial investigation workplans, you come to
10 really four questions that are the focus of what we're
11 trying to do with all these activities. We want to
12 identify what contaminants are present that may pose a
13 risk. This is both dioxins and furans that we've been
14 talking about, and also our license requires us to
15 look for other compounds of interest that may be
16 present off site in these study areas. So we will be
17 conducting, and you'll hear Lauri talk about, some of
18 the sampling that we're trying to do to identify any
19 of those other contaminants.

20 We need to know where they are now and something
21 about how they have moved in the past, and that has a
22 lot to do with the Tittabawassee River, less to do
23 with things in the Midland area. The river is a
24 dynamic situation. The river floods frequently, as
25 I'm sure those residents along the river know all too

1 well, and you get movement and changes in the sediment
2 distribution over time. So we've got studies to
3 answer that.

4 And then is there an impact on the environment.
5 You heard Denise from Imitrex, and I think you're
6 aware that MSU has been given a grant by Dow to
7 conduct this environmental risk assessment, and
8 they're two years into a multiyear study which is
9 going to evaluate those conditions and to perform some
10 kind of a risk assessment with regard to what they
11 find there.

12 And then in addition, the fourth question is, is
13 there a risk to humans, and this, of course, is the
14 most important one of all, and there's quite an
15 elaborate setup of methods and information that will
16 be required to get at a meaningful response and answer
17 to that very question, both for Midland and for the
18 Tittabawassee River.

19 The general approach that we take with these
20 investigation workplans is to try initially to draw a
21 picture based on the information that we already have.
22 Just by way of example, the GLNPO data, and you saw a
23 lot of other data that was collected the last time we
24 met, and we take all the information that we have
25 available to us today and we try to draw a picture of

1 what is the current situation that we're dealing with.
2 It's not a full picture, and that's the reason for the
3 remedial investigation workplans. We're trying to
4 enhance that picture, so we can start to make some
5 decisions from that.

6 We need to identify specific questions that need
7 to be answered by looking at the existing picture with
8 the existing data, and then we need to go sample and
9 analyze those samples and once again use that
10 information to gather the newer information to further
11 develop that picture, and you keep cycling that until
12 you can say this is a comprehensive picture, that you
13 have agreement between DEQ and Dow and other agencies
14 that this is a picture that's sufficient for us to
15 make informed decisions about what actions, if any,
16 are required and where and what kind of risk is
17 associated with these findings. This by the way is a
18 very standard practice and approach for large and
19 complex sites, such as what we're dealing with here.

20 I'm going to turn it now to Lauri to take you
21 into the depths of some of the details here. Thank
22 you.

23 MS. LAURI GORTON: Thanks, John, and I'll
24 get myself set up here as quickly as I can. I
25 appreciate the opportunity to be here tonight to give

1 you a relatively high level overview of the remedial
2 investigation workplans. I understand that some
3 people have actually had a chance to go through the
4 documents themselves, and there may be some of you
5 that would like a little bit more detail than what
6 we're going to have time to cover tonight. We'll be
7 happy to address those questions and do our best to
8 answer them after we're done. I also can appreciate
9 that some of you may wish for a little less detail
10 that I'm going to cover. For those of you, I thank
11 you in advance for your patience.

12 We prepared two workplans to reflect the two
13 basically different situations that we have between
14 the river and Midland. In the Tittabawassee River,
15 we're looking at historic waste water discharges,
16 things that have been distributed over decades by the
17 river systems and have been deposited primarily to
18 sediment and floodplain soils. In the Midland area,
19 we're looking at historic air depositions that have
20 been deposited on surface soils.

21 I'd like to start first talking about the
22 Tittabawassee River workplan. As John mentioned, we
23 built the conceptual site model using quite a body of
24 existing information, including DEQ's baseline studies
25 and some of the recent studies that Dow has done, and

1 talked through the sampling that we proposed to help
2 us identify what contaminants may be present, refine
3 that picture of conditions to develop a better
4 understanding of where they might be, and also, we'd
5 like to see if we can develop a predictive model that
6 can be used to estimate current and potential future
7 conditions, and I'll talk about all those things as we
8 go forward here.

9 I'd like to spend a little bit of time first
10 talking about our site model. It's important to
11 understand this, because much of our sampling approach
12 builds on these basic models. One aspect of the model
13 is based on a body of information about rivers in
14 general. Rivers all over the world have been studied,
15 and there's quite a bit of information about how they
16 move, you know, what the river system dynamics are and
17 particularly how rivers tend to move solid materials.
18 Much of our model focuses on understanding how solid
19 materials move through the river system, because when
20 you're dealing with contaminants like furans and
21 dioxins, they attach to the solid particles. So if
22 you can start to understand how solids move, you can
23 begin to understand how material moves and, therefore,
24 the contaminants, and this is just one line of
25 evidence. You know, there are several things that

1 we'll look at throughout the investigation, but this
2 initial model is presented in section three of the
3 workplans. We've got some background information, so
4 I'd like to start by going through that.

5 Basically, what you see here is a three
6 dimensional picture, a representation, with the river
7 going through. Again, it exhibits some of the
8 features of what river scientists, I believe they
9 would call them, the classic meandering stream. I'd
10 like to talk about two different conditions of the
11 river as we talk about how solids move. The first one
12 being what happens when the river is flowing within
13 its banks. As the river flows within the banks, what
14 will happen is, as water moves down and goes through
15 these outside portions of the bends, it will tend to
16 erode or cut those banks out, and as the water is
17 coming back out and again flowing and it comes along
18 the inside of the bends, the water slows down, and the
19 speed of water is very important, because as it slows
20 down, it will start to drop out sediments, and that's
21 why you start to see depositions like these point
22 bars. For those of you who live along the river or
23 have been up and down the river, I'm sure you can
24 actually go out and see these features.

25 So again, as the river is flowing within its

1 banks, it moves sediments, and the sediments tend to
2 be fairly mobile. When the river is moving slow,
3 during the summer if you go out and look at the river,
4 you can see it's very clear. There's not a lot of
5 sediments suspended, so there's not a lot of movement,
6 but as it rains and the flow rates pick up, you'll see
7 the water be more cloudy, more sediments are moving
8 within the river channel itself.

9 Now when the river floods and overtops the banks,
10 the picture gets a little bit different. As the river
11 floods and comes outside the banks, what you'll see is
12 that the water carries solids with it, and as the
13 water hits the banks, it starts to slow down, and some
14 of the larger particles are deposited first. Those
15 form some of the levies right along the banks that you
16 see and also other features that they call splays.

17 And as the water moves further out and really
18 starts to slow down, it will then start to drop out
19 some of the finer grain materials, and these are
20 things that you can actually see. If you've gone out
21 after flood waters have receded, you might see a film
22 possibly on the surface. That's these finer
23 particles. Once the solids are in the floodplain,
24 they tend to be a lot less mobile than they are as
25 they're moving as sediments in the river channel.

1 A couple of other notes just about the
2 Tittabawassee River system in general. The river is
3 considered to be a fairly high energy river. You
4 don't see spots of low energy as you go down where
5 there are big still pools, still pools where sediment
6 might drop out. It has a rapid response to rain
7 events. So when it rains, the water tends to come up
8 quickly, and it also has a very large upstream
9 watershed, and this entire watershed tends to
10 contribute solids to the Tittabawassee River, and we
11 measured the volume or the amount of solid loadings
12 both at the upstream end of the river and at the
13 downstream end, or the confluence, and what we're
14 seeing initially is that the volumes are similar.
15 We're seeing about the same amount when we measured at
16 the upstream end as we are at the downstream end, and
17 that would suggest that the solids that are coming
18 into the system from upstream are continuing to move
19 through the system.

20 And I guess the last point I'd like to make here
21 is that the sediments we've done, taken samples, and
22 we've done coring up and down the length of the river,
23 and the sediments are very consistent up and down the
24 river. We tend to see primarily finer sands and a
25 lesser fraction of clays and silts. Some of the

1 preliminary observations that we've made about the
2 river sediments relative to quality, and again keeping
3 in mind that most of the data that we have now are on
4 furans and dioxins, but the concentrations of the
5 furans and dioxins in the river channel appear to be
6 highly variable. We have not seen defined areas of
7 high concentration. I'll talk about that a little bit
8 more in a second. And we're also not seeing at this
9 point a clear trend in concentration from upstream to
10 downstream. That is, we don't see a trend of
11 increasing values as we move downstream from Midland.

12 And these two pictures illustrate some of the
13 points that I just made. I'd like to point out, this
14 is right off of West Michigan Park area. This aerial
15 photograph down here will give you a few landmarks to
16 help orient you where that river is, and then the
17 picture here on this side is Imerman Park. Again,
18 this aerial photo gives you a better feel for where
19 the samples were taken in the river. The legend here,
20 we've tried to use symbols that were consistent with
21 DEQ so folks would get used to them.

22 The red dots indicate areas where we sampled and
23 the concentration was over 1,000. When we did this
24 initial sampling in 2003, these are surface sediment
25 samples, we found high concentration in these two

1 spots, and we wanted to go back out to the same areas
2 and see if on a smaller scale we could identify an
3 area around those spots of -- you know, if the
4 elevations were consistently high in that area or just
5 what that looked like.

6 So we went back in 2004, and we went back to both
7 of those locations and sampled, and actually, what we
8 saw was, we didn't see a large area of high elevation,
9 and as a matter of fact, when we went back and
10 sampled, we didn't even see the original high
11 concentration again. What we did see though -- and
12 again, you've got the colors here of the red being
13 over 1,000, we've gone gradually down to a green of
14 less than 90. What we did see was, and this is where
15 I mentioned before, is a high variability. Again, in
16 West Michigan Park, we took our samples again at the
17 original point and then stepped out gradually some
18 distance from each way, highly variable. The
19 concentrations went up and down, not quite as much
20 variability, but still we did not see that high
21 concentration.

22 So again, this is preliminary data. It's too
23 soon to make any conclusions, but based on these
24 couple of things that we've seen, we're saying that we
25 feel that the sediment concentrations may be highly

1 variable and also that there are changes with time,
2 because one of the other things that happened between
3 the initial sample and when we went back was that
4 there was a flood event, so it is an indication that
5 things are changing. That's consistent with our model
6 of a high energy system where sediments mix and there
7 is some change over time.

8 Again, some of the preliminary observations that
9 we're making based on the existing data, within the
10 floodplain, is that it appears that the areas of
11 higher furan and dioxin concentrations are associated
12 with some of the land forms caused by the deposition
13 that I just mentioned, the banks and the levies, the
14 materials that's been deposited from the river. The
15 concentrations appear to be related with distance from
16 the river, and once we get outside the March 2004
17 floodplain, in general, the concentrations of furans
18 and dioxins tend to drop off to below 90.

19 And again, I'd like to go through a series of
20 pictures here to show you what we were using to base
21 those initial observations. This is an aerial
22 photograph of one of the three focus study areas that
23 we sampled last year just downstream of Smith's
24 Crossing, and what you can see on this picture is
25 Midland Road up here. This red line is the March 2004

1 floodplain line, which also is approximately an 8-year
2 flood line. I think we've talked before about the
3 general study area initially being a 100-year --
4 within the 100-year floodplain. What we found when we
5 looked at the March 2004 flood was that it was
6 representative of an 8-year event, but one of the
7 things that was very nice about that is we were able
8 to get detailed aerial photography and be able to pick
9 out actually on pictures where that floodplain is
10 located, and then again you see the sample locations
11 here with the red dots indicating over 1,000 down to
12 the green being below 90.

13 And as I mentioned before, as you start up here
14 above that 8-year floodplain line and/or further away
15 from the river, we're seeing generally lower
16 concentrations. As you start to move down into the
17 river and towards the river, we get into the areas of
18 where the depositional features are present, you tend
19 to see some of the higher concentrations.

20 This is actually a different picture of the same
21 site, and what this picture shows is the topography or
22 the elevations. The areas that you see here, the
23 lighter colors, indicate areas that are much higher in
24 elevation, with purple areas being low lying areas.

25 This is taken from a fairly accurate survey that we

1 had done a couple of years ago, so we've got very good
2 survey data for both the floodplain itself and
3 actually of the channel bottom, but what this shows,
4 it's a little bit -- I brought this picture out
5 because it's a little bit easier to see those areas of
6 deposition that I mentioned before. You know, the
7 river comes down, and at these bends, when it floods,
8 it comes out of its banks. You can see here this
9 higher spot of levies that are formed, and again, we
10 see some of the higher concentrations close in, and as
11 you follow these stream and flood lines down, it tends
12 to drop off.

13 We've done the same thing at two different
14 locations. I won't spend quite as much time, but this
15 is Imerman Park. We're seeing some similar things.
16 Again, you have the 8-year floodplain line here, and
17 generally, outside of that 8-year floodplain line, the
18 concentrations are lower, with the notable exception
19 of this one high concentration that we believe may be
20 the result of soil being moved actually by a person as
21 opposed to the river up into that area, but as you
22 come down here, what you see is that, again, as the
23 river flows its banks, when it's flooding, the water
24 doesn't just go straight away. It will come out, and
25 it will flow straight across the channel, so this is a

1 deposition area, and we're seeing higher
2 concentrations along that area, and then similarly
3 here, as the river floods, the flow streams would tend
4 to come out and go along here, and that's why we're
5 seeing some of these red dots along here. We believe
6 it's following the river channel, so seeing
7 consistently high elevations down near the river on
8 those deposition areas.

9 And then finally, we also started to do some
10 sampling down closer to the confluence by Center Road.
11 We weren't able to complete a grid down there because
12 we weren't able to get access to all of the
13 properties, but the little bit of data that we did get
14 preliminary tends to be consistent with what we had
15 seen before, again higher concentrations outside the
16 floodplain, closer in you got higher concentrations in
17 the deposition areas, lower concentrations above the
18 8-year floodplain.

19 So now to get to some of the questions that are
20 the RI workplan will answer. The first, what
21 contaminants are present. That's a two-step process.
22 One of the first things that we did, which is standard
23 for remedial investigations, is in order to determine
24 what we should be looking for, we started with a very
25 broad list of over 230 chemicals that may have been

1 associated with past plant activities. Again, it's
2 standard to go back and start with a very broad list
3 of what might be expected. We then took a look at
4 those chemicals and evaluated which of them we felt
5 would be able to survive out in the environment for
6 decades being moved around by the water and
7 essentially came up with a list of just over 115
8 chemicals that we think could have persisted for that
9 long in the environment and in the water, and we call
10 those our target analysis.

11 The workplans propose sampling, and I'll talk
12 about that a little bit more, for these targets, and
13 what we'll do with the analytical results is take a
14 look at them and see if we're seeing things and
15 determine which contaminants will need additional
16 investigation and be carried through in the process.
17 Now at this point, there's been very little broad
18 analysis done. Most of the analytical work that's
19 been done both by DEQ and Dow has been focused on
20 furans and dioxins, but there have been some samples
21 that have been run for the broad list, and we're not
22 seeing a lot of other things at this point, so we
23 don't necessarily expect to find a lot more, but in
24 order to be thorough and comprehensive, we need to
25 evaluate a broader list, and then these will be taken

1 forward again as what we call potential constituents
2 of interest.

3 This figure is very similar to some of the ones
4 that we have in the RI workplan. We modified it a
5 little bit for our use here tonight. What you see up
6 in this corner is the City of Midland, the Dow Midland
7 plant, and then the blue line here being the river
8 itself, this kind of sandy area being the 100-year
9 floodplain, and then down here the City of Saginaw.

10 The black triangles are existing sample points where
11 we have information already, and then the green
12 triangles are the locations where we're proposing
13 sample sediments to analyze for this broader list to
14 answer what contaminants may be present. That
15 information will tell us what's there. It will also
16 give us a little information on where they are within
17 the river channel, and we will add that to the
18 existing information that we have to refine our
19 picture.

20 Similar base map for the picture, City of Midland
21 up here, City of Saginaw down here. In order to
22 answer the question, what contaminants are present in
23 floodplain soils, we proposed floodplain soil sample
24 locations as you see through here. There's
25 approximately 60 locations. We'll be sampling for

1 surface soils and subsurface soils, again for that
2 target analytic list.

3 And as part of trying to better define our study
4 area boundary and better understand what areas we need
5 to focus on, one of the questions that we're asking
6 that's a more specific question here is, is the 8-year
7 floodplain boundary the more appropriate boundary than
8 the 100-year floodplain. One of the reasons we're
9 asking is because we've seen the tendency for the
10 concentrations to drop off above the 8-year floodplain
11 line as I just described, and here these black cluster
12 of dots are the areas that I just discussed, Smith's
13 Crossing and Imerman Park and then Center Road, and
14 the red line that's here is the 8-year floodplain
15 boundary, and you can see that for a good portion of
16 the river the 8-year and the 100-year floodplain
17 boundary are very close together, so that will give us
18 information actually on both, but where we were more
19 interested, as you get down into the confluence and
20 the topography starts to flatten out, there's more of
21 a spacial distance between the 100-year floodplain
22 boundary and the 8-year floodplain boundary, so we
23 proposed sampling along that line to better evaluate
24 that.

25 Another question, what contaminants are present

1 in surface water. We're proposing a collection of
2 samples at these locations during both normal flow
3 events and higher flow or flooding events to evaluate
4 how much solids are suspended in the water and also to
5 take samples, and those will be analyzed for that full
6 contaminant list.

7 One of the other questions that we want to
8 answer -- want to begin to answer is, where are the
9 contaminants, how do they move, and we're actually
10 building our understanding, as I mentioned before, in
11 several different ways. We are proposing doing some
12 additional sampling of those floodplain depositional
13 areas, but we're also doing ongoing studies designed
14 to capture more information about how the river system
15 moves and what happens during flood events. The
16 sampling proposed for the depositional area will
17 essentially focus on some of these features. We'll
18 actually -- we haven't determined the specific spots
19 yet, because what we'll do is we'll go out in the
20 field and find a point bar or find a levy and then set
21 up a regularly spaced sampling grid to collect both
22 surface and subsurface samples, and that will give us
23 better information on our theories about the
24 significance of the depositional features.

25 Then we also have three ongoing evaluations,

1 because the river floods when it wants to flood and
2 the water goes down when it wants to go down, and so
3 to get that full spectrum of information, we need to
4 be out there looking at things for some time. We've
5 been doing almost continuous water level measurements
6 essentially every 15 minutes, and we've also taken
7 flow measurements at several different flow rates, at
8 various high and low flows, to evaluate the water
9 flow. We've placed clay pads and turf mats out in the
10 floodplain, and the clay pads are just as they sound.
11 They're pads made out of clay that we put on the
12 surface of the floodplain, and next to them we've
13 placed astro turf mats basically on the surface, and
14 what we'll do is we'll leave them there and go back to
15 them after there's been a flood event, and it actually
16 allows you to see whether there's been material
17 deposited, to measure the depth of the material and
18 also to collect samples so that we can analyze those
19 and determine what contaminants might be present in
20 the material that's accumulated, and then finally,
21 we're also doing riverbed and bank elevation surveys
22 to measure changes over time, to try and understand,
23 are there areas where things are being built up, are
24 there areas where things are being eroded or scoured
25 away.

1 The question, is there an impact on the
2 environment? Michigan State University has been out,
3 as some of you know -- we've talked about that a
4 little bit before -- observing songbirds, water fowl,
5 kingfishers, owls, heron for about a year, and
6 actually the mink I understand they've been out for a
7 little bit closer to two years. These species were
8 all selected because they're considered to be
9 particularly sensitive species and also because they
10 live and they feed within the floodplain. They've
11 looked at areas both upstream and downstream of
12 Midland, again, to see if there's a difference in the
13 upstream populations versus the downstream
14 populations.

15 I'm going to show you a series of photographs
16 that were actually taken by the Michigan State folks.
17 This is the fun part of the presentation. Photos that
18 they took as they were out doing their work. These
19 are songbird nestlings taking from a nesting box that
20 allows them to check on the numbers of eggs, see how
21 many hatch successfully. This is the kingfisher.
22 This was something I didn't realize, kingfishers
23 actually build their nests in burrows, so they
24 actually tend to build their nests in those cut banks,
25 and Michigan State's done something that I think is

1 really neat. Their king cam, they've actually
2 developed a technique where they're able to look at
3 the kingfisher in the burrow and observe it on the
4 nest, again see how many eggs are being laid and how
5 they're hatching and progressing.

6 The Great Blue Heron, another species that's
7 being observed, I understand that there's a large
8 rookery within the floodplain, over 100 nesting pairs,
9 and I thought these guys had the best part of the
10 investigation -- we're looking at dirt and they're
11 looking at all these neat animals -- until I saw that
12 they had to climb way up in trees to get to the wood
13 duck nesting boxes, and this is a Great Horned Owl,
14 and this is one of the Michigan State guys with a
15 Great Horned Owl fledgling that they banded, and again
16 when I saw the gloves that he needed to wear to catch
17 the baby owl, I thought, gee, maybe this is not so bad
18 after all, and then finally, here's a photograph of
19 one of the minks that's out along the banks of the
20 river.

21 So again, Michigan State's only making very
22 preliminary observations right now. They're one year
23 into a multiyear study, but some of the things that
24 they are seeing at this point in time are that the
25 tissue and the dietary exposure concentrations of

1 furans are higher downstream than they are in the
2 upstream areas. The songbirds, they're tending to see
3 the types that they expect and the numbers. The
4 kingfisher, they've been able to watch them reproduce
5 and are actually seeing some of the banded fledglings
6 successfully hunting, and they're seeing good
7 productivity with the water fowl, and then the mink,
8 they're able to say a little bit more about them
9 because they've been able to observe them for longer,
10 but essentially at this point, they're seeing the mink
11 present year-round at or above expected numbers, that
12 the population size and the health status is good, and
13 that they're really not seeing a difference between
14 the upstream and the downstream populations.

15 And then the fourth question that the remedial
16 investigations will answer is, is there a risk to
17 humans. Now to answer this question, state of the art
18 risk assessment uses a combination of real data,
19 things that you actually go out and collect, and
20 reasoned assumptions. It's used to prioritize risk
21 and drive decisions about corrective action, and the
22 workplan proposes using standard practice and also
23 collecting site specific data, and what I mean by site
24 specific data is that many of you may be familiar with
25 the generic cleanup criteria that's listed in Part

1 201. When any kind of generic criteria is developed,
2 it's developed for the general case and it's developed
3 deliberately to be conservative, so it's protective in
4 any situation.

5 Using site specific risk assessment essentially
6 allows you to go out and evaluate the specific
7 conditions in an individual area, with the overall
8 goal being, of course, to reduce uncertainty and
9 obtain the most comprehensive understanding of risk
10 that we can.

11 The method that's proposed in the workplan is a
12 probabilistic risk assessment. It's an approach that
13 uses all available validated data to fully
14 characterize the risks and the uncertainties. There's
15 a benefit from a comprehensive understanding of site
16 specific risk, and it also prioritizes risks and
17 focuses the efforts to reduce those priority risks.

18 It's very important that this risk assessment
19 process is transparent. DEQ will be reviewing and
20 approving methods, data collection and all of the risk
21 assessment outcomes. They're also relying on an
22 external science advisory panel as a peer check. It
23 will be managed by an independent third party, and
24 they will review each step of this process, and the
25 process also really encourages input from the public.

1 To just give you a very brief overview of the
2 general risk assessment process, kind of four main
3 parts. The first is about understanding exposure, and
4 exposure is simply, how do you come in contact with
5 different things. So it will take information from
6 studies on actual human activity at different land
7 uses to understand how people are hunting for
8 recreational use, how people are using their land in
9 residential areas, and it will also incorporate the
10 data that we're getting from the sampling that
11 identifies where contaminants are within the areas.

12 Also, we'll need to determine toxicity values for
13 use in risk assessment, and then finally the
14 probabilistic risk assessment will use all of this
15 information for both of the study areas, and the
16 outcome will help us evaluate corrective action as
17 warranted.

18 I'd like to switch gears for a minute here and
19 talk briefly about the Midland remedial investigation.
20 Again, in Midland, we're looking at historic emissions
21 and particulates distributed by the air and then
22 deposited on surface soil. This is our simplified
23 model for the City of Midland, and it's very generic
24 in terms of it being a typical model of airborne
25 particulate distribution.

1 What you see here is a stack, a typical smoke
2 stack, and what happens as particles are distributed
3 in air is that you tend to have the heavier particles
4 falling out first and falling out closer to the source
5 area. So you see these heavier particles falling out
6 here first, deposited on surface soil, and then as you
7 get away, you tend to see fewer and lighter particles
8 that drop. That's just a physical distribution model
9 that's fairly well understood.

10 The initial deposition is on surface soil, but
11 then what tends to happen is that in some places, like
12 forests, the soil is undisturbed, there's not a lot
13 that goes on. Other places where it is open, it is
14 possible for the particulates to be redistributed by
15 runoff or just by what we call mechanical
16 redistribution, people moving soil around.

17 This figure shows the much smaller amount of
18 existing data that we have for the City of Midland.
19 What you see here is that this is the boundary of the
20 Dow Midland plant. This orangish line out here is
21 US-10, and we just put this 3-mile indicator on to
22 give you some sense of distance and scale, but the
23 existing data, both DEQ data and again Dow data, is
24 consistent with the model that I just described. The
25 little bit that's there, you're seeing higher

1 concentrations, again the red is the over 1,000 down
2 to the green below 90, and as you get further away
3 from the source area, you see lower concentrations.

4 Now there's one other thing that I'd like to
5 point out in this figure that's important to the
6 understanding of how contaminants might be distributed
7 there, and that's this funny looking thing called the
8 wind rows. The way the window rows works is exactly
9 backwards from the way that you think that it should
10 work. Down here in this direction, the bars are the
11 longest actually, and pardon my bad grammar, but in
12 the direction from where the wind is coming from. So
13 what that means is that actually the prevailing winds
14 are blowing in this direction. So for these longer
15 legs, you see the prevailing winds blowing in
16 generally a north to northeast direction, and then
17 with the shorter legs being a lesser wind amount.

18 We have proposed some pre-RI testing in Midland
19 to evaluate physical soil characteristics. There will
20 be some soil sampling just to understand basic
21 physical soil characteristics and preliminary sampling
22 as well as for dioxins and furans to see if there are
23 other potential contaminants, and for this pre-RI
24 testing, the sample locations would be blinded, so you
25 couldn't take the results and compare them to a

1 specific spot, and they would remain blinded, unless
2 they met some criteria that's been established by DEQ.

3 The Midland remedial investigations will
4 essentially answer the same four questions. The first
5 couple being, what contaminants are present, where are
6 they, how do they move. The initial sampling that's
7 been proposed to answer these questions, the surface
8 soil sampling, and we've put those out in the
9 transects that follow the general direction of the
10 prevailing wind, so that's why you see the longer
11 transects going out in this direction here. Again,
12 here you have the Midland Plant, US-10, about a 3-mile
13 radius, and we've extended these transects to go well
14 beyond the area where we have existing data, and again
15 you see we do have transects on all sides, but the
16 transects are shorter in these directions because that
17 is not the direction of the prevailing wind. So these
18 samples will be collected and analyzed for that large
19 target analytic list, and the information will be used
20 as we evaluate soil concentrations, the resulting
21 concentrations we can possibly draw a better line
22 between these to narrow the study area.

23 Again, the question, is there an impact on the
24 environment in Midland. Here we're approaching things
25 a little bit differently. What we're proposing to do

1 is identify the existing habitat areas within the
2 City, you know, identify where they're located, what
3 species are there, and then after we've done the
4 sampling and identified the boundary of the study
5 area, we're going to come back to see if that habitat
6 is present within the study area, and if it is, we
7 would propose to do additional evaluation to better
8 understand the conditions in those areas.

9 We're also asking the question within Midland, is
10 there a risk to humans, of course, and we're using
11 generally the same process as proposed along the
12 river; although, the work will be done in a different
13 sequence, and the information that's gained while
14 we're doing the studies along the river will be
15 used -- will be considered and should complement the
16 work that's being done in Midland.

17 Finally, just a note about the status. As Jim
18 mentioned, the workplans are being reviewed. We did
19 do a presentation with the agencies on January 18th to
20 walk them through. DEQ, EPA and Dow are going to be
21 meeting to discuss the workplans, the comments and
22 also to resolve any issues, and then in accordance
23 with the license, once we do have an approval, the
24 field work will be starting within about 45 days.

25 So that was all I had. If there are I guess any

1 clarifying questions, if you want to hold those for --

2 CHUCK NELSON: Yes, because I want John to
3 do the brief update on the Priority 2 interim actions,
4 and then we will get to everybody's questions and
5 comments. I don't want to cut people off.

6 JOHN MUSSER: Switching gears momentarily
7 here, just to give you an update on the so-called
8 Priority 2 interim response activities. You'll recall
9 during 2005 we conducted the Priority 1 IRA's, and
10 these were properties generally that had the most
11 severe flooding where the flood waters either reached
12 to the residents or were within 20 feet of the
13 residents or where we had a sample point that actually
14 indicated a level of dioxins and furans higher than
15 1,000 parts per trillion.

16 The Priority 2 approach is again to minimize
17 contact with contaminated soils with elevated levels
18 of dioxins and furans. All of the Priority 2
19 properties are located along the Tittabawassee River.
20 There are no Priority 2 properties in Midland. The
21 flooding location and sampling data that Dow has
22 evaluated to this point suggested that the potential
23 for contact with soils greater than 1,000 parts per
24 trillion is lower for the Priority 2 properties, and
25 this would stand to reason, I think just using common

1 sense, that because of the flood rivers not being as
2 close and in many cases the flood waters being in
3 wooded areas and the like, we just believe that some
4 of these properties are less likely to represent
5 exposure potential.

6 We submitted this plan on January 18 in accord
7 with the framework and defined properties along the
8 river as Priority 2 when the aerial photographs
9 indicated that the flood waters even touched the
10 property or where the testing, of course, has shown
11 with a tested sample that the furans or dioxin level
12 was greater than 1,000 parts per trillion. The 2005
13 sampling results that have been developed over the
14 course of the year has improved our understanding of
15 the Priority 1 as well as the Priority 2 properties.
16 So we've got a better handle. We feel we can make
17 fewer assumptions and base more of our decision making
18 on real data. Now that's not to say that we've got
19 all the data we need. That's probably not going to be
20 the case. We're probably going to need to do some
21 additional sampling, but at least we can say with more
22 confidence that we've got more data which does improve
23 our understanding.

24 The next steps, actually this afternoon, we
25 received word from DEQ that we have approval with

1 modifications of the package for Priority 2 interim
2 response activities that we submitted. We will no
3 doubt have some discussions. Dow has not had the
4 opportunity given the short turnaround time here
5 before the meeting to look at those modifications, but
6 I'm sure there will be some discussions, and we're
7 optimistic that we'll be able to move ahead very
8 shortly with implementation with the Priority 2
9 interim activities, which would involve our sending a
10 letter with information materials and an activity
11 survey, which will provide information as to how the
12 property is used, and an access agreement, which would
13 be required for participation in the program. AKT
14 Peerless once again is being contracted to conduct the
15 followup work and to coordinate the interim actions as
16 needed.

17 Participation, as in the case of Priority 1
18 activities, is fully voluntary. The activity survey,
19 however, and the access agreement must be completed
20 and signed and submitted, if the homeowner wishes to
21 participate or the property owner. The information
22 contained in the activities survey, and this is an
23 important note, may be subject to information request
24 called, this is under the Federal Freedom of
25 Information Act, and the information could become

1 public, so just want to be fully transparent on that
2 point, and this will all be explained at another point
3 in time when we get closer and in the package of
4 information that you receive.

5 I believe that is all I've got to say about the
6 Priority 2 interim actions. Thank you for your
7 attention, and I think we're into the Q and A.

8 CHUCK NELSON: Okay. Now lots of
9 opportunity here, folks. I've moved it along, so we
10 have an hour and 20 minutes by my watch for you to ask
11 questions, provide comments. So who has the first
12 question or comment?

13 AUDIENCE MEMBER: My name is Jim Marino. I
14 just saw an article in the paper today that Dow has
15 stated they were going to do soil testing for people
16 who ask for it. How does that fit in with this
17 remediation, soil testing of property?

18 JOHN MUSSER: I don't think that's correct.
19 There will be testing, of course, of private property
20 as part of the -- in Midland for this pre-RI sampling
21 for bioavailability, and then there also may well be
22 some sampling that goes along with the Priority 2
23 implementation along the Tittabawassee River, but
24 those will be, you know, on a case by case basis.

25 CHUCK NELSON: Another question.

1 AUDIENCE MEMBER: Jeff Kyro. I have a
2 question regarding the soil sampling in Midland. I'm
3 curious, with this soil sampling, if a resident allows
4 the property or allows that to occur at their
5 property, if the results turn out to be greater than
6 90 parts per trillion, does that mean that the
7 property owner's property would then be labeled a
8 facility?

9 JIM SYGO: The initial testing that's
10 proposed in the City of Midland was initially proposed
11 to be blind, blind, so that if the property owner's
12 soils were higher than 90, at this point in time
13 during the evaluation, the Department, nor Dow would
14 know whether those levels were exceeding 90. Some of
15 the details are still being worked out on that
16 particular situation, so that we can move the study
17 forward and make sure that we can collectively utilize
18 the data in a fashion that's acceptable both to the
19 State, as well as to Dow Chemical in this study, but
20 in answer to your question, the direct answer would
21 be, the Department doesn't designate those things to
22 begin with when a property is a facility. If your
23 property is sampled and it's over 90, you know, it's a
24 facility by definition in law. In this particular
25 case, we're trying to provide some protection so that

1 at this point in time we wouldn't know the individual
2 parcel of property that's being tested, but we're
3 trying to get adequate information about the area
4 that's being evaluated.

5 CHUCK NELSON: Next question or comment.

6 AUDIENCE MEMBER: I'm Ruth Averil. I live
7 in Tittabawassee Township, and I'm Vice Chair of the
8 Saginaw County Parks and Recreation Commission, and I
9 have two things I wanted to state tonight, and one
10 was, living in Tittabawassee Township, there is a new
11 park called Festival Park right along the river, and I
12 took some pictures of the park, and it's flooded, as
13 everyone knows that lives in that area, right now.
14 Spring came early, and there are the walkways where
15 footprints of sediment of people walking down to the
16 river's edge. I feel as a resident that there should
17 be like a gate or something across this walkway,
18 because there was children down here, and as you can
19 see, the footprints aren't large, and this is why
20 we're having this cleanup, for our children. So what
21 is Dow going to do about this? They paid for this
22 park.

23 JOHN MUSSER: I appreciate you bringing this
24 to our attention. All I can say is that we will take
25 that information, and our folks will investigate that,

1 and we'll provide you with a response as to what may
2 or may not be in the works to deal with that
3 situation.

4 AUDIENCE MEMBER: I mean, it's nice to have
5 a park, but to have it more accessible to the river
6 than ever before where the sediment is and the young
7 lady here said that the sediment moves --

8 JIM SYGO: One thing I'd like to mention I
9 guess is relative to the framework, I think the
10 agreement was particularly in residential areas that
11 where you have situations where flooding has been
12 redistributed -- as a result of flooding, sediments
13 have been redistributed, that the agreement was that
14 those areas would again be evaluated by Dow to make
15 sure that exposures are controlled.

16 JOHN MUSSER: I don't know if that would
17 apply in that situation.

18 JIM SYGO: I don't know right offhand. I'd
19 have to go back to the framework to look if the parks
20 were included in that, but generally, I know,
21 particularly where there was pavement in the
22 residential areas, that Dow had an obligation under
23 the framework to re-evaluate those areas, and again,
24 we'll have to take a look if that also applies to
25 parks.

1 AUDIENCE MEMBER: So if you want my
2 pictures, I'll turn them in to you. That will be
3 fine.

4 JIM SYGO: We'll be glad to look at those.

5 AUDIENCE MEMBER: One other thing, the
6 waterway cleanup is a priority in the State of
7 Michigan, and I want to applaud our speaker from the
8 DEQ that spoke in Kalamazoo at a conference about the
9 cleanup of the Great Lakes, and it was Ken, and I'll
10 probably butcher the last name, Esesowitz. He spoke
11 just a couple of days ago. It was in the Saginaw
12 News. I appreciate the Saginaw News keeping us
13 informed.

14 CHUCK NELSON: Sir.

15 AUDIENCE MEMBER: My name is Tom DOWer. I'm
16 from Midland County. Looking at some of your testing
17 sites, I see that north of M-46 where the river
18 crosses, there's kind of like a little island there.
19 When she talks about fast flow, slow flow,
20 sedimentation fall out and stuff, I don't see much
21 testing on that area. I don't understand why, because
22 there's a bridge there which would -- it narrows down
23 the flow, so you're going to have a lot more
24 sedimentation. There was a golf course in there at
25 one time, so it was human improvement there, and now

1 it's just kind of back to wetlands again with maybe an
2 insurance office, or I can't remember what kind of
3 office was in there, but why don't we study that area
4 more? We're trying to educate ourselves about how all
5 of this sells out, how it then travels -- picks up and
6 travels again. I don't understand why we haven't
7 studied that area more.

8 JOHN MUSSER: Thank you for your question.
9 If I could ask Gary Dyke from CH2M Hill to help.
10 They've been working very closely with Dow to develop
11 the sampling plans.

12 MR. GARY DYKE: Thank you very much and
13 thank you for your question. One of the things that
14 we've done today is provided a very high level
15 overview of the activities that are going to occur,
16 and the one thing I think we probably didn't talk
17 about too much was that, what we're doing is what's
18 called a phased process, and the first or the next
19 part of work that we're doing, as Lauri talked about,
20 was to go out and evaluate these depositional features
21 so that we can study them better, and as we study them
22 better, we will then be able to project those results
23 to areas, like the one that you're talking about, so
24 that we can better understand how the distribution,
25 how contaminants are distributed throughout the entire

1 river system. So I think the answer is that we intend
2 by the time we complete our studies to have fully
3 evaluated the entire river system.

4 AUDIENCE MEMBER: Bill Moon. The area he
5 was referring to was the old Cavanaugh Lake I believe
6 I lived on. I still live on it over 40 years, and
7 it's been all filled in with silt and dioxin. The DEQ
8 measured both ends over 1,000 parts per trillion.
9 Army Corps of Engineers had it registered as the only
10 natural lake of Saginaw County, and now it's only
11 about a foot deep. It's about a mile long. It's east
12 of River Road, west of the Tittabawassee River, and it
13 runs in between with the blue heron rookery on the end
14 of it, and it emptied into the Tittabawassee under
15 Hidden Hollow Long, and I was wondering if there was
16 anything going to be done about that lake that's been
17 destroyed, not only by Dow but by farming that have
18 filled it in with silt and the silt picked up the
19 dioxin, and since I've lived in there, it's filled up
20 over 22 feet. So if you wanted to test it for 22 feet
21 of silt and dioxin, you could do it anytime on my
22 property. You're more than welcome to.

23 JOHN MUSSER: Thank you for pinpointing the
24 location. Again we take that information and
25 incorporate it into the evaluations and go forward

1 here, but I think at this point, not having data
2 sufficient to really make decisions, we're not really
3 in a good position to talk about what we will or won't
4 be done at this stage.

5 AUDIENCE MEMBER: Thank you.

6 CHUCK NELSON: Go ahead.

7 AUDIENCE MEMBER: My name is Katie Imers.

8 I've lived along the Tittabawassee River for twelve
9 years now. I grew up playing -- like when the river
10 would flood, my brother and I would -- used to take
11 little boats out and go play. Like living there the
12 majority of my life, my brother and I, I'm just
13 wondering like what risks -- it just was flooded this
14 past week. It comes right up. Like our hill -- like
15 we have a hill in our back yard and it goes right up
16 to the bottom of the hill. How much -- I'm not really
17 informed. This is the first time I've been here. How
18 much are we at risk for this, if we've been playing on
19 it, exposed to it, we used to ice skate on it when we
20 were a lot younger? I don't know -- I don't
21 understand how much of a risk we're at.

22 JOHN MUSSER: Could I call on one of our
23 medical folks or risk assessors here?

24 MR. COLLINS: Most of the studies, however,
25 have been done among populations that will have

1 exposures -- most of the studies have been done on
2 populations that have been exposed to levels of
3 dioxins that are 10,000, maybe 100,000 times higher
4 than what you're likely to be exposed to from an
5 environmental exposure. So it's very difficult to say
6 if there's any health effects related to even the
7 exposures that are very high. We've studied, for
8 instance, our workers here in Midland, and we found --
9 we've looked at things like cancer, heart disease,
10 diabetes. We've looked at reproductive effects among
11 the wives of the workers that worked at the plant.
12 These workers, like I said, had exposure levels to
13 dioxins that are 10,000 times higher than maybe what
14 would be considered background, and even among these
15 workers, other than chloracne, which is an acne-like
16 skin condition, we found no health effects related to
17 these dioxin exposures. So I guess what I'm saying is
18 it's hard to say if low exposures increased your risk
19 at all, but among the studies of workers with very
20 high exposures in Midland, we have found no health
21 effects, other than this chloracne, from these high
22 exposures.

23 CHUCK NELSON: Go ahead.

24 AUDIENCE MEMBER: My name is Angel Shores,
25 and I'm from Delta College. A couple of questions.

1 If there is high concentration of dioxin in resident
2 sites, are the residents able to put a lawsuit on Dow
3 in any way?

4 JOHN MUSSER: They have.

5 AUDIENCE MEMBER: I wasn't informed of that.
6 Thank you. Pretty high amounts? Like what's like the
7 price range? What's --

8 JOHN MUSSER: The litigation -- there is a
9 lawsuit. It's pending appeal in the court system
10 right now, and you know, really can't provide a lot of
11 details because it's in that state, but there is
12 litigation.

13 AUDIENCE MEMBER: All right. And one more
14 question, the AKT Peerless followup work, what work
15 does that entail?

16 JOHN MUSSER: Let me take a quick shot at
17 that if I can. When we did the Priority 1 interim
18 actions, it involved things like covering exposed
19 soils with woodchips or reseeded them. In some
20 cases, there was some dusting within the homes. We
21 cleaned some furnace ducts, carpets were cleaned, that
22 kind of thing, to minimize exposure on various
23 residential properties.

24 AUDIENCE MEMBER: Thank you.

25 CHUCK NELSON: Jim's got a comment he needs

1 to make about something that came up previously.

2 JIM SYGO: In response to the previous

3 question that the young lady had regarding risks

4 associated with this, I just need to say, we're not

5 here to be argumentative, but the DEQ does not always

6 share the opinion of Dow, and in the interest of

7 providing DEQ's position on this, we don't -- we do go

8 through a process that identifies what we believe are

9 risks to public health, and as part of the State

10 regulations, we've identified 90 parts per trillion as

11 being a potential risk level for areas where residents

12 reside on a regular basis. I think we also recognize

13 that certain sensitive populations, such as young

14 children and women of childbearing age, may be at risk

15 even more so than that, and so it's just a situation

16 that this is a question that needs to be answered.

17 There are two diverging populations of science that

18 look at this, and it's part of an issue that's being

19 evaluated nationally as part of the dioxin

20 reassessment, too, so we just wanted to provide that

21 balance to you.

22 AUDIENCE MEMBER: I was going to say that

23 that was unconscionable to allow Dow to respond to

24 that question to that young lady with that sort of

25 minimized response, because I think we have a

1 considerable amount of very legitimate information
2 from very, very good toxicologists, including the
3 State toxicologists, to suggest that dioxin is an
4 extremely potent toxin and that it impacts people at
5 very low levels, and I want to get back to that in a
6 minute, but before then, I have a couple of questions,
7 primarily of Jim. The questions that Dow Chemical
8 Company posed as part of their remedial investigation
9 included, is there an impact on the environment, is
10 there a risk to humans. Are those questions reflected
11 in the license requirements that this entire operation
12 is based on?

13 JIM SYGO: I think they're reflected in the
14 license from the standpoint of what corrective action
15 calls for, and one of the things that corrective
16 action would look at is the release of any hazardous
17 constituents that would have an impact on public
18 health, safety or welfare, so you know, it's a broad
19 interpretation. This was Dow's interpretation for
20 their presentation, but I believe it is incorporated
21 into what the requirements would be for corrective
22 action. Those are questions that ultimately need to
23 be asked and answers need to be provided for as part
24 of the remedial investigation.

25 AUDIENCE MEMBER: Well, if that's the case,

1 it would appear that Dow has answered those questions
2 repeatedly already before the data has come in.
3 They've got quite an extensive public record on their
4 position on the questions that they are posing, which
5 appear to me more rhetorical questions than they are
6 data questions or any effort to get to a true
7 remediation. Back in 2003, you can look at what Dow
8 has said, dioxin in the river and floodplain does not
9 pose a serious threat -- a serious risk. The Company
10 went on to say, dioxin soil sediments is not -- and I
11 quote -- is not generally available for significant
12 exposure to people and, therefore, presents no
13 significant health risk. They've already answered
14 their own question. Now they're proposing to select
15 and purchase data to support a position that they've
16 held and have maintained since this discovery was
17 made. This incidentally, and it's part of apparently
18 this difference of opinion with the State, but it
19 wouldn't be apparent here, at the time that statement
20 was made, T.J. Buckles from the Michigan Department of
21 Community Health said, Dow Chemical has no data to
22 support that. We cannot say conclusively the dioxin
23 in the floodplain is not available to humans that live
24 here -- or live there. In fact, don't we have some
25 data at this point to suggest that it is being uptaken

1 biologically?

2 JIM SYGO: Again, I would believe that to be
3 the case. I don't know if Brendan wants to respond,
4 but there has been a pilot study in terms of exposure
5 to the soils within the floodplain, which, you know,
6 my recollection seemed to have shown, you know, there
7 is some information that would suggest that exposures
8 are there.

9 AUDIENCE MEMBER: Well, Jim, there are many
10 people here that are relatively new to this public
11 meeting. It perhaps would be incumbent upon the State
12 to share that information with the public, and in
13 addition to that, we just saw some very healthy
14 pictures of animals on the floodplain, of birds, but
15 isn't it also correct that we have some fairly
16 substantial data that has resulted in a consumption
17 advisory for animals on the floodplain as a result of
18 their exposure and uptake of dioxin?

19 JIM SYGO: Absolutely, and again --

20 AUDIENCE MEMBER: Then perhaps --

21 AUDIENCE MEMBER: I going to emphasize,
22 Terry, that this was Dow's presentation. The
23 Department has not completed its review of the
24 remedial investigation workplan at this point. We
25 hope to do that very quickly and move forward, and

1 again there are some concerns that we have identified
2 that we have with the document itself, but until we
3 complete that review and until we also get comments
4 back from the other agencies, we're not at this point
5 prepared to give detailed comments on what we believe
6 some of the issues are with the IR workplan.

7 JIM SYGO: Except again, Jim, because we're
8 only hearing from Dow in this very public meeting,
9 with the media present. New people here, new folks
10 here are not hearing the other side, the issues that
11 have already been uncovered, and I think somebody from
12 the DEQ or Department of Community Health needs to
13 speak to those. I have some other questions, too, but
14 I think at this point, is there someone who can speak
15 to those two issues that I just brought up?

16 CHUCK NELSON: Terry, I want people from
17 Community Health to respond first.

18 MR. BRENDAN BOYLE: Since we're not in the
19 format of a meeting, I'd recommend for information on
20 those topics people go to the websites, people get the
21 reports on the wildlife advisory and on the pilot
22 exposure investigation that the Michigan Department of
23 Community Health did. Our findings, our conclusions
24 are very carefully worded in there, and rather than
25 paraphrase them or take over the agenda, we would want

1 people new to the topic to go to those places and hear
2 exactly what was said.

3 CHUCK NELSON: Let me make -- let a couple
4 of other people, if there's other comments. I'm not
5 trying to cut you off, but if other folks have
6 something to say and haven't gotten a chance, I want
7 to give them an opportunity. Sir.

8 AUDIENCE MEMBER: Yes. I have a question
9 for the DEQ. I'm aware of the -- I believe it's a
10 current study that DOW has helped promote on a health
11 study through U of M on residents in I believe both
12 Midland, as well as along the Tittabawassee. However,
13 there's a concern I have with that, and so this
14 question is posed more to the DEQ. Has the DEQ
15 considered a health study with lifelong residents only
16 being the ones that would be evaluated that have lived
17 in the east side of Midland, as well as along the
18 Tittabawassee River, because my concern is from my
19 understanding of the study that's being done now is
20 that it's just a sample of all the residents. Midland
21 is a community where people move in and out a lot, get
22 transferred and so on, and so I would like to see a
23 study done on the people that have been exposed for
24 the longest periods of time. I think that's where we
25 could find some valuable information to see, is there

1 really a health concern here or not. So has the DEQ
2 considered doing something like that?

3 JIM SYGO: Again, in terms of the U of M
4 study, it isn't a study that we contracted to have
5 conducted. In terms of a health study that would be
6 done for the area, that would be something that
7 typically would be carried out through the Michigan
8 Department of Community Health. There has been an
9 evaluation and there is continuing to be evaluations
10 through the agency for, I think it's referred to
11 ATSDR, Agency for Toxic Substances and Disease
12 Registry, and as part of that process, there is
13 ongoing evaluation relative to the health implications
14 within Midland, as well as the Tittabawassee River
15 area, and I think maybe Brendan can provide us a
16 little additional information.

17 MR. BRENDAN BOYLE: The U of M study is an
18 exposure investigation. Sometimes health studies are
19 grouped together and health study for most people --
20 for us, it means epidemiologic study where disease
21 associations are being looked at in the presence of
22 toxins. The U of M study is an exposure investigation
23 study to see if people living in the floodplain have a
24 larger body burden of dioxin attributable to exposure
25 to the river compared to a population living at a

1 distance. That's not really a health study. That's
2 an exposure investigation. The Michigan Department of
3 Community Health has cooperative agreement with the
4 Agency of Toxic Substances and Disease Registry. We
5 are doing health assessment. We've done
6 consultations. We're not done here yet, but for the
7 moment, we're working on finalizing the preliminary
8 exposure investigation document in response to the
9 comments that we received.

10 CHUCK NELSON: Go ahead.

11 AUDIENCE MEMBER: My name is Carol Chisom,
12 and I own two parcels on the floodplain, one I
13 purchased just three months before this all came to
14 light about the dioxin. I planned on building a new
15 house on it. Right now, although I'm 1200 feet from
16 the river, my property does have water on it from the
17 river. When I put this on the market, when I put my
18 home on the market and my lot on the market, who's
19 going to pay the cost of having my property tested
20 when the prospective buyer wants it tested? And it's
21 \$1,000 a test I understand, and if it is tested, what
22 good will that do when you can have acceptable levels
23 in one spot and a couple feet away have levels that
24 exceed 1,000 PPT?

25 CHUCK NELSON: Are you asking any particular

1 person?

2 AUDIENCE MEMBER: The question was, what
3 good will it do to have it tested, number one, and
4 number two, who's going to pay the cost of having it
5 done?

6 JOHN MUSSER: I can give you a little bit on
7 number one. I think the whole idea behind -- I know
8 the whole idea behind this remedial investigation and
9 the phase approach that we're taking or would like to
10 take is going to provide answers to whether or not
11 certain properties have elevated levels or not, to the
12 best of our ability to analyze that, and you know,
13 that's going to be very closely scrutinized by the
14 agency and this third-party advisory group, the
15 independent group, as to who's going to pay for the
16 sampling. If it's part of the remedial investigation,
17 Dow is paying for it.

18 AUDIENCE MEMBER: But if I decide to sell my
19 home and the prospective buyer wants it tested at
20 \$1,000 a shot, I can't afford that. So you know, I
21 can't sell the property or I have to give it away.

22 JOHN MUSSER: Well, there's a provision for
23 Dow to pay for sampling under those kind of
24 conditions. If it's part of the remedial
25 investigation, then Dow would, of course, cover the

1 cost of that.

2 AUDIENCE MEMBER: John, I think what's
3 happening is you're beating a dead horse and I'm going
4 to die before this gets resolved.

5 JIM SYGO: Just in response, it somewhat
6 depends where your property is situated, but if you
7 recall, Dow had talked about the Priority 2 areas that
8 are being evaluated this calendar year. We're in the
9 process of again finalizing those plans. We just
10 submitted our modifications to Dow today. Under those
11 circumstances, if you're a Priority 2 property, it's
12 entirely possible that your property could be tested.
13 Again it depends exactly where your property is
14 located, if it falls within that Priority 2 realm. If
15 you were part of the Priority 1 properties on the
16 Tittabawassee River floodplain, I think there were
17 some options available to you at that time that you
18 could have had your property tested, too, possibly in
19 some situations. So were you contacted as part of
20 Priority 1?

21 AUDIENCE MEMBER: No. I'm not a Priority 1,
22 but that's not the issue. The issue is, when you
23 decide to sell and that becomes an issue, who's going
24 to pay the cost? Is it or is it not a \$1,000 a test
25 site?

1 JIM SYGO: Depending on the number of
2 samples you might take, it could run as much as
3 \$1,000, \$1,200. When you do a large number of
4 samples, it might be a little less, maybe \$800, but my
5 point is, this process for Priority 2 is going to be
6 starting very quickly. We're probably talking within
7 the next 30 days I'm hoping that there will be
8 contacts out there. Under those circumstances, if
9 you're one of the Priority 2 property owners, there
10 might be that availability for that testing by Dow at
11 that time.

12 CHUCK NELSON: Other questions? Michelle,
13 go ahead, and then John.

14 AUDIENCE MEMBER: Jim, this question is for
15 you. When is DEQ going to be responding to the IR
16 workplans?

17 JIM SYGO: Very quickly. We hope to have
18 our responses done hopefully within another week or
19 two in terms of finalizing those.

20 AUDIENCE MEMBER: And how will you bring
21 that back to the public?

22 JIM SYGO: Our expectation is that once
23 those have been submitted to Dow we would certainly
24 make that available on our website any comments that
25 we do have.

1 AUDIENCE MEMBER: And how would we be able
2 to have a discussion with you on these IR workplans
3 like we're able to have with Dow?

4 JIM SYGO: Just give us a call and we'll be
5 glad to set something up. We can have -- for those
6 who might have an interest in doing something of that
7 nature, we would certainly be willing to try to set up
8 a separate meeting in the area.

9 AUDIENCE MEMBER: So essentially, there's no
10 public give and take on your workplans, critique of
11 the workplans, like Dow has afforded us tonight? I
12 guess what I'm saying, Jim, is I think if you really
13 want to be constructive with these meetings, there
14 needs to be an exchange where the public, the DEQ and
15 Dow are participating. You know, right now in the
16 most part, these meetings have been Dow and the public
17 going back and forth.

18 JIM SYGO: I think you've seen the volume
19 and the size of workplans, Michelle.

20 AUDIENCE MEMBER: I have.

21 JIM SYGO: And we have not completed that
22 review, and in fact, our initial comments will
23 probably be high level comments. We're still
24 expecting comments from the agencies, as well as the
25 trustees. We're going to be reviewing this for a

1 while in some detail yet, but to the extent that other
2 people, you know, want specific details that we can
3 get into once we've completed some reviews, we'd be
4 glad to set that type of --

5 AUDIENCE MEMBER: So perhaps at the May
6 meeting, that's something that we could have put on
7 the agenda?

8 JIM SYGO: We would certainly have, you
9 know, anything dealing with the workplan at the May
10 meeting available. Our hope would be that we would
11 have a remedial investigation plan that's approvable
12 by the May meeting, which means that if there's going
13 to be give and take we'd certainly have to do it
14 before then, and you know, part of our hope is that
15 we're listening to the questions that residents have
16 now so that we have an indication, so as we go back
17 and complete our comments, we're incorporating those
18 comments into ours as well.

19 AUDIENCE MEMBER: Right, and I would agree,
20 Jim, that public comment is important, but in the end,
21 you're our voice with Dow Chemical. You're the
22 regulatory agency, so your voice is important, and I
23 really would have liked to have heard it in this
24 forum. However, one other thing if I could. In the
25 human risk assessment that Dow is proposing, I think

1 it was bullet number seven or something, Dow
2 identifies the development of an area wide cleanup
3 criteria, and I can assume this language is important
4 to Dow, because it's now been referenced in the Dow
5 DEQ framework. It was referenced in House Bill 4617,
6 that the Governor rightfully vetoed, and now it's in
7 the workplan, and I'm just curious what constitutes
8 area wide? Is there a legal or statutory definition?

9 JIM SYGO: There's not a statutory
10 definition of area wide criteria. There is a
11 statutory definition of site specific, and I think
12 when they speak of area wide, they mean more site
13 specific. One might be for the area of Midland. One
14 might be for the area of the Tittabawassee River
15 floodplain, and again, those are some of the things
16 that I think we need to make sure that we understand
17 what Dow is proposing as part of the IR workplan, and
18 you're right, in order to understand some of that, we
19 need to have some face to face contact meetings, and
20 we haven't been able to schedule those, you know,
21 since we've had the workplan submitted.

22 AUDIENCE MEMBER: Lauri, could you maybe
23 address that section on the -- I understand site
24 specific. I don't understand area wide.

25 MS. LAURI GORTON: I would agree with the

1 definition that Jim provided. That it was intended to
2 be a site -- follow the same site specific procedures
3 that are outlined but just apply to a larger area.

4 AUDIENCE MEMBER: So essentially, we could
5 end up with the entire Tittabawassee River having one
6 number --

7 MS. LAURI GORTON: It's by land use,
8 residential land use.

9 JIM SYGO: One thing I did want to mention
10 in terms of comments from the public, George just
11 reminded me, it might have been in the agenda that
12 went out but certainly in the press release that went
13 out, we're asking people to submit their comments that
14 they might have written or oral to us, if they want to
15 give us a call or by e-mail, by March 15th. So we are
16 looking for trying to have that information from the
17 public from their review of the documents. The
18 documents are on the DEQ website. I believe there's
19 copies at the Zauel Library here, Al, right?

20 MR. AL TAYLOR: They're in seven or eight
21 locations. All IR workplans, they're at Bay City
22 District Office in Bay City. They're at the Zauel
23 Library in Saginaw Township. They're at the Grace A.
24 Dow Library in Midland.

25 JIM SYGO: And for the recorder's help, the

1 Bay City District Office is located on Euclid in Bay
2 City, at the Midland Grace A. Dow Library, and Zauel
3 Library in Saginaw Township on Center Road, and we
4 also have a copy in our Division office in Lansing as
5 well, and again it's also available on the internet.

6 CHUCK NELSON: John, go ahead.

7 AUDIENCE MEMBER: Thank you, Chuck. John
8 Woodsky again. I'd like to help this lady out.
9 Dr. Shaheen said he'd buy any property along the river
10 that anybody wanted to sell.

11 AUDIENCE MEMBER: He already refused to buy
12 mine.

13 AUDIENCE MEMBER: Oh, my God. I can't
14 believe that. Getting back to a little bit more
15 serious comments here, in the Midland Daily News last
16 night, Dr. John Cobbs from Dow Chemical Company wrote
17 an article on this issue that we're addressing here.
18 He states that dioxin in the soil as long as it's
19 setting there is not going to be any problem and cause
20 any ill effects on anything whatsoever. You just
21 mentioned a while ago we got advisories on game and
22 fish in the Tittabawassee River and in the floodplain.
23 Now when you're talking carnivorous or plant eating
24 animals both, there's an advisory against deer liver
25 squirrels and so on not to eat issue by the State.

1 What I can't understand is if this Doctor hasn't read
2 what the State has advised citizens in that area or
3 not. It also goes into human health studies. We've
4 had a number of these meetings, and none of them have
5 come up with what -- we heard a little bit of
6 reproductive studies by one of the Dow folks here
7 today, but nowhere have I heard anything about
8 maternal body burden in mothers. That has to be
9 answered. When you get a bioaccumulation of toxic
10 chemicals and whatever, those issues have to be
11 addressed. You've already gotten dioxin in chicken
12 eggs and so on along the floodplain, can't eat this,
13 can't eat that. How is this affecting mothers? It's
14 already been proven that 50 percent of potential
15 births are gone by within 30 days first menstrual
16 period. Now EPA hasn't gotten any answers, and I
17 don't see why we should jump at something as complex
18 as this until we get those kind of answers.

19 CHUCK NELSON: Response from anyone?

20 Hearing none, next question. Sir.

21 AUDIENCE MEMBER: My name is David Summers.

22 I live on the river. I got Priority 1 property. A
23 question on your Priority 2 properties, it sounds like
24 every other property now that's in the floodplain is
25 going to be included in Priority 2, is that correct?

1 JOHN MUSSER: Not necessarily.

2 AUDIENCE MEMBER: That's where I'm a little
3 confused. My basic question is, since I've got a
4 Priority 1, it says every other property. How am I
5 going to be included in this, or am I going to be
6 treated differently than Priority 2's and as part of
7 every other property flood waters touched in 2004? So
8 that would basically include the whole floodplain.

9 JOHN MUSSER: Those are criteria, as I
10 understand it, and I can use some help here if it's
11 available from the Dow team here or DEQ. I understood
12 that the criteria -- the standard was that it had
13 to -- at least you had to have a property that had
14 been sampled having one sample that was measured at
15 over 1,000 parts per trillion or the property had to
16 be touched by flood waters. Now that's a standard.
17 That doesn't mean that automatically every property
18 that was touched with the flood waters is a Priority
19 2, as I would understand it. I think there's going to
20 be a determination made by DEQ ultimately as to what
21 is and what isn't a Priority 2 of the properties to
22 meet those standards.

23 AUDIENCE MEMBER: So it could be one or the
24 other, either touched by the flood waters or 1,000
25 parts per trillion?

1 JOHN MUSSER: Correct. That would make the
2 standard, but whether actually ultimately it's
3 designated Priority 2 or any of the interim actions
4 would be warranted, that's a decision that needs to
5 come as a result of further evaluation of properties
6 and the use of the properties.

7 AUDIENCE MEMBER: So each one would be
8 evaluated on a case by case basis?

9 JOHN MUSSER: Exactly.

10 AUDIENCE MEMBER: Now I'm a property owner
11 that's got Priority 1. It was already determined last
12 year. How is this change -- is this going to affect
13 me at all? Am I going to be included in these
14 mailings, or anybody else that's in this, or are we
15 going to be treated, in effect, as a separate class,
16 Priority 1, Priority 2's?

17 JOHN MUSSER: The Priority 1's are just
18 that, Priority 1's, and presumably, as a Priority 1
19 property owner, that was addressed and dealt with in
20 the Priority 1 IRAs or the interim response
21 activities. So there are some activities that follow
22 with regard to Priority 1's in flood events
23 potentially, and those will be honored, of course, but
24 in terms of the Priority 2's and Priority 1's, I don't
25 think there's --

1 AUDIENCE MEMBER: So those are going be to
2 be, in effect, two separate distinct classes?

3 JIM SYGO: One thing I'd like to emphasize,
4 the Priority 1 properties were identified within that
5 8 to 10-year floodplain, as John had indicated, if
6 waters came up to and inundated your home or came
7 within 20 feet of your home. The purpose of the
8 Priority 1 effort was to reduce exposures to the
9 residents of those homes which the activities that
10 have been conducted over the past year. It is not a
11 remediation. It doesn't mean all the work has been
12 done on those properties that may potentially need to
13 be done. There's still investigations that may be
14 necessary, but one of the other aspects, if your
15 property floods again, under the framework, Dow has a
16 commitment to move back to those properties to insure
17 that whatever was done last year to reduce those
18 exposures hasn't been impacted. So anybody who has
19 Priority 1 properties, if you're flooded now or if you
20 flood this spring, ought to be getting back in touch
21 with Dow regarding that and letting the DEQ know, so
22 that that can be readdressed, because the intent there
23 is to insure that when you walk off on your deck that
24 you're not going to be in a situation where you're
25 being exposed to the river sediments that have come up

1 as a result of a new flood coming into that area.

2 AUDIENCE MEMBER: In a followup to that
3 then, last year we had quite high flood waters.
4 Priority 1, I got the house cleaned. My wife was
5 excited. This year, so far it's only flooded partly
6 in the yard. It has only encroached upon a very small
7 area that was reseeded and covered, not into the rest
8 of it. So could I expect that area that has been
9 reflooded so far to be remediated or treated again
10 this year as opposed to doing the whole yard again?

11 JIM SYGO: If the area has reimpacted the
12 home, particularly on the additional barrier control
13 that they provided or if you have sediments that have
14 fallen out onto your porch deck or onto pavement in
15 your home areas, those -- that's what would be
16 addressed as part of the Priority 1. Now there may be
17 a need, and I don't know how -- and maybe Peerless can
18 help us out with this. There may be a need to address
19 other portions of your property, depending on how it
20 was utilized, if that hadn't been addressed, because
21 they were only looking at the area immediately around
22 the home, so if you use the area very close to the
23 river where there might be higher concentrations. I
24 think one of the things that needs to be evaluated is
25 how you're using that area and whether you're

1 potentially getting additional exposures as a result
2 of that use. Al, would you agree with that.

3 MR. AL TAYLOR: Let me make one
4 clarification. If a part of the yard flooded and
5 there's barrier put down and that barrier was
6 compromised in some way, say it was eroded or all
7 grass bare soil there, then there would be an
8 obligation to go back and recover that area and put
9 that barrier back in place until the final remediation
10 has been completed.

11 AUDIENCE MEMBER: And that would be a
12 determination that Peerless would make by surveying
13 the property again?

14 MS. PRISCILLA JOHNSON: I just want to make
15 sure that we have a commitment to followup with the
16 Priority 1 properties. AKT Peerless has been
17 contracted to do any of the followup with that. So it
18 would be the responsibility of the resident to contact
19 AKT Peerless. You have those materials that they left
20 behind for you. Let them know so they can go out and
21 document it. They'll take pictures, and if there's
22 anything that they had done last year that has been
23 impacted by any flood event, they'll go back, reseed,
24 put mulch down, whatever was done that was impacted by
25 something that they had done last year, it will be

1 handled.

2 AUDIENCE MEMBER: Okay. That pretty much
3 answers that. Thank you.

4 CHUCK NELSON: Ma'am, you're next.

5 AUDIENCE MEMBER: Hi, Kathy Henry. I just
6 had one question, and I was curious, did Dow actually
7 test any of the properties in the Priority 1 last
8 year, and if not, why?

9 MS. PRISCILLA JOHNSON: No. Dow did not
10 test any of the Priority 1. It was not part of either
11 the interim response activities nor part of the
12 framework.

13 AUDIENCE MEMBER: Really. I thought that
14 that was an option that people could ask for that were
15 getting the work done to have the testing done, or Dow
16 suspected that there wasn't contamination that they
17 could test it to see if that was --

18 MS. PRISCILLA JOHNSON: I would say -- and
19 this is obviously pending our review of the documents
20 from DEQ today on Priority 2's -- that that may be a
21 possibility with Priority 2 properties that they could
22 be sampled.

23 AUDIENCE MEMBER: Thank you.

24 MR. AL TAYLOR: Under the Priority 1 IRAs,
25 there was the option to test Priority 1 properties.

1 Dow chose not to exercise that option and do
2 presumptive remedies on each property. I think the --
3 I believe the lady is correct, that that is an
4 option -- or that was an option under the Priority 1
5 IRAs.

6 JOHN MUSSER: For Dow, not for the
7 individual property owner.

8 MR. AL TAYLOR: And also part of that, the
9 individual property owner had the ability to
10 negotiate, per say, with Dow to come up -- you know,
11 if the sampling was something that really was desired
12 by that property owner, part of the IRA was to, you
13 know, other reasonable items as agreed to by the
14 property owner and Dow, but sampling was a possibility
15 there, but it was one that was chosen not to be
16 exercised in the thought of kind of moving forward my
17 understanding with providing the response activities
18 more quickly rather than waiting for results to come
19 back.

20 CHUCK NELSON: Sir, you're next.

21 AUDIENCE MEMBER: I've got a question about
22 the sample numbers for the City of Midland or for
23 around the plant. There doesn't seem to be that many
24 sample sites. It would seem -- I guess, what is
25 trying to be proved by that star burst around the

1 Midland Plant of the number of testing sites?

2 JOHN MUSSER: And I can start it, and if I
3 need help, jump in here guys. Indeed, there aren't a
4 lot of samples, and that is part of the reason why
5 we're doing the additional sampling that we've talked
6 about here with the, if you will, the spokes that come
7 off from the Dow site, long is from the north and east
8 direction because that's the direction the winds come
9 from and that's the way we would expect the air
10 deposition to have taken any of the contaminants. So
11 we'll be doing additional sampling and continue to do
12 sampling until we feel we've got enough information,
13 and DEQ agrees obviously, that we have enough
14 information to make some decisions about what
15 corrective action may be warranted.

16 AUDIENCE MEMBER: Okay. Because one thing
17 about the slide that was showing the stacked
18 depositions, the degree of deposition is proportional
19 not only -- or is proportional to the height of the
20 stack, as well as the prevailing wind speed, and then
21 you would actually see -- on a high stack, you would
22 see actually peaks of contamination farther away from
23 the site than you would on a short stack or with lower
24 prevailing winds. So the idea that you're doing these
25 testing, I think it's wonderful that Dow now all of a

1 sudden has gotten on the testing bandwagon, but with
2 that in mind, with the wind speed and stack height, it
3 is totally then possible that the wider concentrations
4 or the heavier concentrations of dioxin and any other
5 contamination could be missed as those spokes spread
6 so wide apart, because as you get further out, you can
7 hide an elephant between those spokes and you'd never
8 know. It would seem to me to make more samples in the
9 areas where you think you're going to see it and to
10 have them a little closer together.

11 MS. LAURI GORTON: First of all, I'd like to
12 say, thank you for the question, and you're exactly
13 right about the concept that the particulate
14 deposition is a function not only of prevailing winds
15 but of stack height, so you're correct. I guess the
16 best answer to the question is that, the reason we
17 were proposing the transects initially is because
18 there is very little information in the City of
19 Midland, both on the types of contaminants that may be
20 there and their location. So the transects were a
21 first cut to identify what areas we're going to need
22 to go back and look for in more detail. One of the
23 reasons that the transects were so long was to try to
24 take into consideration, what you had mentioned, about
25 advocacy. So as we get information from the

1 transects back, that will give us a better feel for
2 where those peak concentrations may be laying, and
3 again we'd refine the area and go back and look for
4 additional information. So what you're seeing as the
5 star burst is a first shot at an area that we know
6 little about.

7 AUDIENCE MEMBER: Well, wouldn't it make --
8 I guess it would make more sense then as you get
9 further away and the area -- the ground covering
10 between your sites in your radials increases, that it
11 would make more sense then to put more -- or maybe a
12 couple more testing sites in between those radials to
13 get a more complete picture.

14 MS. LAURI GORTON: You know, I'm thinking
15 that maybe we could talk with you in a little bit more
16 detail here, because there are several different ways
17 to go about these things. You know, this is a first
18 proposal, and I'm not sure that we want to get into
19 too much in the back and forth about all the other
20 ways we could have done it, but your thoughts are
21 reasonable.

22 AUDIENCE MEMBER: Well, I've got a couple
23 more comments. There was a Midland sponsored event at
24 I believe it was the Midland Arts Center, is that the
25 right name for the place, where basically Director

1 Chester was invited to attend, and nobody from DEQ was
2 able to speak at all. I think it was the Midland
3 Health Director was standing up there doing his
4 powerpoint thing. One of the slides that he had up
5 there showed mortality due to certain causes over the
6 previous, I forget now how many years, this is a while
7 ago, and he was saying that there were no significant
8 statistical -- statistically significant spikes in
9 cancer mortality in Midland, and yet, there were two
10 very significant spikes, one for prostate cancer and I
11 believe the other one was for stomach cancer, which in
12 my mind anyway totally discounted anything else the
13 man had to say, because that slide basically said that
14 he either didn't look at the slide or didn't realize
15 what he was saying, and there was also a meeting at
16 the Herbert Dow High School up in Midland where there
17 was a paper going around that somebody had acquired
18 that was from one of the Dow, I believe it was,
19 toxicologist who said that there was significant -- or
20 statistically significant results in some of their
21 epidemiological or toxicological studies on their
22 workers to say that, yes, prostate and stomach cancer
23 statistically significant in the Dow employee base,
24 and I've also heard that Dow is supposed to be doing a
25 longitudinal study of workers that have left Dow

1 Chemical to find out how they may have died and any
2 illnesses that they may have acquired outside of the
3 employ of Dow Chemical, and I have heard that that
4 study was never completed or at least it was never
5 released, and I don't know if that is correct or not.

6 MR. JIM COLLINS: Let me try to answer your
7 question. First of all, I think the study that we're
8 referring to where there was that issue of prostate
9 cancer and stomach cancer rates were greater than
10 expected refers to the Dow chlorophenol workers site
11 that I mentioned a little bit earlier. In that
12 particular study, we did examine 28 different types of
13 cancer, and the way this works, you always compare
14 observed cancers to expected cancers, and then by
15 chance, you'd expect half of the cancers to be greater
16 than expected and half of the cancers to be less than
17 expected. We did observe a statistically significant
18 excess of prostate cancer among our chlorophenol
19 workers. We also observed in some of the
20 subcategories a statistically significant excess of
21 stomach cancer.

22 However, to put those numbers into perspective,
23 we also observed many causes of death were less than
24 expected, some significantly so. So you don't come to
25 conclusions in epidemiology studies based upon just

1 that evidence. So what we did further in those
2 studies to examine that issue is we looked to see if
3 prostate cancer and stomach cancer were related to
4 exposure levels of dioxin, and what we found out when
5 we looked at that is both prostate cancer and stomach
6 cancer were very flat, indicating that they didn't
7 increase with increasing dioxin levels.

8 So from that, we concluded that we did not think
9 that those cancers were, in fact, related to dioxins.

10 Now we didn't stop there. In fact, we're in the
11 process now of not only doing a better exposure
12 evaluation based on serum dioxin levels. We're also
13 updating all those studies. So sometime early next
14 year, we hope to have the results of those studies,
15 where we look at all these cancers, not only prostate
16 and stomach cancers, but also the cancers that most
17 scientists may be related to dioxins or could be
18 related to dioxins and we'll model all those to see if
19 there's any excess risk. Again, that increases with
20 increasing dioxin exposure. That's how we do
21 epidemiology studies.

22 To tell you another thing, too, Dow has studied
23 these workers, and we've never hid anything from
24 anybody. We've studied these workers from 1940 to the
25 present. We've published 20 papers now in peer review

1 journals on these 2,192 chlorophenol workers, and
2 we're in the process now of doing a major serum study.
3 We actually have serum now of 400 of these
4 chlorophenol workers, and like I say, this year we'll
5 be using that information to do a more exhaustive
6 evaluation of cancer among these workers, but right
7 now, having put all the data together, I came to the
8 conclusion a little bit earlier, we don't see any
9 increased cancer risk from any cause of death related
10 to dioxin exposure. Did that answer your question?

11 MS. LISA ELDER: Maybe address the fact that
12 that includes the workers that have left the plant and
13 moved out of the area. Just because they no longer
14 work for Dow or no longer live in the area, they are
15 continued to be part of the core and they are
16 continued to be followed and their loss rates are very
17 minimal.

18 MR. JIM COLLINS: We are actually able to
19 keep in contact with each one of these 2,192 workers,
20 no matter where they move, anywhere throughout the
21 United States. When they die, we actually get a copy
22 of their death certificate, and we get that yearly, so
23 we've got a very accurate followup, and we're in the
24 position to publish on these workers at anytime, and
25 that's why right now we're in the process, like I say,

1 of doing several studies on these workers. In fact,
2 in the past year, we have four additional publications
3 on the health status of these chlorophenol workers
4 that have either been submitted or accepted in peer
5 review journals, and again, as Lisa said, we do follow
6 everybody, no matter where they move or even if they
7 leave Dow and leave the State of Michigan.

8 CHUCK NELSON: I'd like to let the fella
9 behind you have his question. If we have extra time
10 for folks who have already had some time, I'd be happy
11 to do it, but I want to make sure folks who haven't
12 had a chance yet to get to have their say.

13 AUDIENCE MEMBER: Gary Henry. I have two
14 questions, one for Dow and one for DEQ. The first to
15 Dow is, actually, I'm here representing a group -- I'm
16 sorry, a couple that could not make tonight's meeting.
17 They're Priority 1 property. They live within about
18 50 feet of the river. They have indoor dust samples
19 tested by DEQ of greater than 90 parts per trillion.
20 They both have diseases that are well known to be
21 associated with dioxin exposure. They have been
22 e-mailing, calling, writing letters, asking, when will
23 you come up and clean up our property of Priority 1?
24 I'm not going to give you a name. I'll give you it
25 after if you must know who they are. They wanted me

1 to go on record publicly to ask you to, please,
2 contact them, and that's that question.
3 Second is, I noticed a reference to the
4 probabilistic risk assessment. Back during the
5 license and the Kayfo (sic) discussions a couple of
6 years ago, the EPA, the DEQ, the ATSDR and a number of
7 other agencies had issues about the proposal that Dow
8 was making on that particular statistical method, and
9 I'm wondering, in this new workplan, have those issues
10 been addressed or is this the same one coming back
11 again?

12 JIM SYGO: I think all we've seen to this
13 point is the desire for Dow to utilize the
14 probabilistic risk assessment process. If you take it
15 on, you know, what's been presented as part of the
16 slides tonight, you know, they're talking about having
17 it being an open and transparent process. Under the
18 Kayfo when that was developed, it was really developed
19 for the most part internal to Dow with their
20 contractor at that time, which was I believe Exponent,
21 and it was, you know, kind of given to us to put into
22 the consent order. In this situation, our expectation
23 would be that, you know, that information would also
24 come out to one of our meetings. We'd also be
25 utilizing EPA to do reviews of materials that would be

1 presented by the contractors that Dow has in preparing
2 that material. So it would be done again in more of
3 an open transparent process so that people will
4 understand what Dow's proposing under those scenarios,
5 and by no means does it mean it's approved at this
6 point. I think we have to look at what the
7 demonstrations are.

8 AUDIENCE MEMBER: So you haven't actually
9 analyzed that yet?

10 JIM SYGO: We haven't, because it hasn't
11 been presented yet. There's a process.

12 AUDIENCE MEMBER: And I guess I just have a
13 statement in response to Dr. Collins. There is
14 another side to the Dow side, and for those that
15 aren't familiar with it, there's a former Dow Chemical
16 engineer who's been paying very close attention to all
17 the Dow workers studies that has a lot of really
18 interesting perspectives on what Dow isn't talking
19 about and how the statistics are a wonderful tool.
20 They do a lot of things with them, and that website is
21 dioxins spin dot com. Check it out. There's a lot of
22 information there on the Dow mortality studies and how
23 they're flawed.

24 MS. DENISE KAY: There was a question about
25 a Priority 1 property. We've submitted our completion

1 report for all the Priority 1 areas to the DEQ at the
2 end of January. We've made our best efforts to
3 contact individuals who were approved Priority 1
4 parcels. If there's anyone additional, please, let me
5 know after the meeting. Thank you.

6 CHUCK NELSON: Is there anyone who has not
7 spoken yet who is in line here? I want to make
8 absolutely sure that everyone gets their chance.

9 AUDIENCE MEMBER: Two quick questions. You
10 mentioned externally you would have scientific
11 advisory panels that would be set up. Do you have a
12 timetable on a process for that, and I think that
13 would be a question for you, John?

14 JOHN MUSSER: I'm going to punt that over
15 here to the team that's been developing our IR, but I
16 mean, I can give you a general sense here, Bill.
17 There will be a standard procedure followed for
18 establishing these independent scientific advisory
19 boards. I mean, it won't be anything novel, and I
20 don't know that there's a time line, because we
21 haven't really had the discussion with DEQ, nor have
22 we reached an agreement on the composition of that or
23 even if there would be one.

24 AUDIENCE MEMBER: But it's this year, rough
25 idea?

1 JOHN MUSSER: That's totally dependent on
2 when we get the approval.

3 AUDIENCE MEMBER: The other question is kind
4 of tied to it, on the general timetable on the
5 process, you talked about the risk assessment phase,
6 and are you talking about months, years? Can you give
7 us a rough idea, the risk assessment phase, how long
8 that will take? And let me tell you, part of the
9 reason I'm asking is, where does Dr. Garabrant's
10 U of M study results end up integrating into this
11 whole process?

12 JOHN MUSSER: Bill, the only thing I can
13 tell you is that, you know, Dow does not ultimately
14 have control over the pace at which things move
15 forward here. I mean, we are regulated and we will
16 have discussions. We'll try to move things along as
17 quickly as we can. We're hopeful and optimistic that
18 they will move along quickly, but I don't think
19 anybody has got an answer -- Jim may want to comment
20 on that -- but I don't think anybody is going to
21 answer, is it going to be two weeks, two months, two
22 years, I don't know.

23 AUDIENCE MEMBER: You know it's not going to
24 be two weeks?

25 JOHN MUSSER: Okay. You answered your own

1 question. Do you have a comment, Jim, on that?

2 JIM SYGO: We've already had I guess at
3 least one panel put together that dealt with the
4 bioavailability study, and in fact, they are reviewing
5 portions of that right now, and that's been conducted
6 through a group called TERA, and Al, can you help me
7 out what TERA stands for?

8 MR. AL TAYLOR: Toxicology excellence and
9 risk assessment.

10 JIM SYGO: But they're a contracting firm
11 basically that takes the opportunity to put, based on
12 an assignment that is given them, to identify the
13 types of expertise that you need in the scientific
14 field and they put a panel together. I think the
15 bioavailability panel study, we had a panel of four
16 different people that included some people that were
17 most knowledgeable about dioxin and, you know, quite,
18 you know, a cross section basically, and they'll pool
19 together the types of panels that they need to get
20 answers to questions, and that's done independently by
21 TERA. That panel is pooled together. They provide
22 the review. In the last process that we had, we had
23 actually a written review that they provided, and then
24 I believe for the update that was necessary for the
25 pilot there was also a telephone follow up with Dow

1 and DEQ to discuss some of the issues that still
2 needed to be answered.

3 Now in terms of future panels, you know, one
4 option is certainly to continue to use TERA. Whether
5 that will be done or not, I don't think we've gotten
6 that far down the road, but that's certainly one
7 option that we would look at if we've been, you
8 know -- if they can respond as quickly as we would
9 like, and for the bioavailability study, you know, I
10 think there were some delays as a result of TERA, and
11 if we can work those types of items out, you know, it
12 might be a solution to get that independent review.

13 AUDIENCE MEMBER: So more than two weeks?

14 JIM SYGO: Yes.

15 AUDIENCE MEMBER: Chuck, you said questions
16 and comments. This is a comment. Future structure of
17 meetings, and this sort of echoes what Michelle said,
18 too, there's an old bumper sticker, silence is the
19 voice of complacency, and the last two meetings, as
20 she has suggested, have been sort of dominated by Dow.
21 We realize the State has a different position. The
22 State repeats that it has a different position, but we
23 don't hear that different position, and we don't hear
24 from the State's toxicologist, and so when we only
25 hear from Dow, we get a position that's one-sided. I

1 don't particularly enjoy being up here giving what
2 essentially is a State's position. I just want to
3 read three brief quotes, because I cannot leave unsaid
4 what Dr. Collins keeps repeating and what Dow keeps
5 repeating. So I want to quote a National, a State and
6 a local source on this dioxin issue, three quick ones.

7 At the National level, this is Peter Defuer. I
8 didn't introduce myself. Terry Miller, Lone Tree
9 Council. This is Peter Defuer, Associate Professor
10 for Environmental Studies, Virginia Commonwealth
11 University, Co-Chairman at the latest peer view of the
12 EPA dioxin assessment, quote, "Dioxin has produced
13 clear and compelling evidence of multiple health
14 effects, not just cancer, not just cancer, multiple
15 health effects, reproductive problems, diabetes, birth
16 defects, liver ailments and increased cancer rates in
17 humans. Dioxin increases the threat of cancer at any
18 threshold, not simply elevated thresholds." That's at
19 a National level.

20 At the State level, source Dr. Linda Dykema,
21 Manager of the Toxicology Response Section, Division
22 of Environmental and Occupational Epidemiology,
23 Michigan Department of Community Health, quote, "In
24 workplace studies, dioxin exposure has been associated
25 with increased rates of cancer, diabetes and

1 cardiovascular disease and decreased levels of the
2 male hormone testosterone. Studies human children in
3 the Netherlands and associated low level exposure, not
4 high, low level exposure with developmental effects
5 such as thyroid and immune system deficiencies, as
6 well as altered cognition and behavior."

7 Local source, Dr. Neil Varger, Medical Director
8 of Saginaw County Department of Public Health, said
9 this November 18th, 2004, "It has been shown that many
10 of the effects of dioxin exposure occur in a
11 non-monotonic fashion, in other words, the dose
12 response curve behaves oddly, with some health effects
13 occurring at very low level exposures, while though
14 those same effects disappear at higher doses.

15 This needs to be said, not by me, not by Terry
16 Miller, but by these individuals and by the State,
17 because people in the public need to hear the other
18 side. Thank you.

19 (Clapping)

20 AUDIENCE MEMBER: I'm Vince Castanillos,
21 Tittabawassee Township. I have a couple of quick
22 points. First I want to congratulate Dow on an
23 excellent position or point of presentation on their
24 position; although, I may have some serious questions
25 about their position. I would like to ask Lauri,

1 first of all, what did she mean by highly variable of
2 dioxins and furans on page one? Are we speaking of
3 some statistical standard deviation or are we just
4 speaking of some level between 90 and what?

5 MS. LAURI GORTON: No. I think all we were
6 speaking of here, and remember there's very little
7 information, but what we are seeing just varies in
8 concentration. We didn't run statistics on that small
9 number of samples.

10 AUDIENCE MEMBER: All right. And I have
11 another question referring to -- and I should point
12 out that it's very hard to read this because it's in
13 black and white, so I don't know where all the red
14 dots and yellow dots and green dots are on this, so it
15 would be very helpful if we're going to respond to
16 this, after spending some time on it, I would
17 appreciate a color print of this, but I see, according
18 to page eight, the air emissions contaminants, I was
19 looking at the south and the southeastern, main
20 concern because that's heading in the direction of
21 Freeland where I live and always have lived for the
22 last 30 years, and as Jim can contest to, he and I go
23 back 20 years on this issue when he was just a soil
24 sampler and I was a laborer, but anyway, are there
25 plans to do any kind of aquifer studies, sampling of

1 our fresh water, since many of us -- or most of us out
2 there in the country are on aquifers?

3 JOHN MUSSER: I'm not aware that there's any
4 plan for that. I think that's probably due to the
5 fact that dioxins are not soluble in water.

6 MS. LAURI GORTON: I'd like to look at the
7 figure to just understand exactly where you're talking
8 about, but one of the things that is addressed under
9 other portions of Dow's operating license are some
10 ground water evaluations, and you know, again we'd
11 probably need to have people take a look at the area
12 that you're talking about, but there are ground water
13 evaluations that are being done under a different
14 portion of the license.

15 AUDIENCE MEMBER: Sure, and the reason why I
16 bring this up is, because I'm very familiar with the
17 disposal wells that Dow had, like seven disposal wells
18 for chemicals. I'm also familiar with their prime
19 system that used to be running through our entire
20 county in that direction. So I'm interested in seeing
21 some kind of study, if that's possible, and finally, I
22 would like to say this to the State, I'm looking
23 forward to your balanced report on this workplan, and
24 I hope that we can all work together to resolve this
25 very quickly. Thank you.

1 JOHN MUSSER: Just one quick comment, just
2 to let you know that you can find the color versions
3 of all these and more graphics on the website -- on
4 the DEQ website, all of that information.

5 AUDIENCE MEMBER: That is on the DEQ
6 website?

7 CHUCK NELSON: Yes. I want to let these two
8 folks speak.

9 AUDIENCE MEMBER: I'm Pat Braught. I live
10 on the Zilwaukee River -- or in Zilwaukee Township on
11 the Saginaw River. I have a question for Lauri. You
12 talked about the sediments for the Tittabawassee River
13 and that they travel quite fluently depending on how
14 fast the Tittabawassee is moving. Is it possible that
15 those sediments have settled in through the Saginaw
16 River?

17 MS. LAURI GORTON: Yes.

18 AUDIENCE MEMBER: Yes, and I have a
19 question, why is the upper Saginaw River being
20 excluded from the framework for Dow Chemical? That
21 part of the river is not being put into the Dow
22 framework.

23 JOHN MUSSER: It isn't being addressed at
24 this point in time, but it will be as part of the
25 license requirement for us to address that part of the

1 river and the Bay.

2 AUDIENCE MEMBER: Well, if it's part of the
3 license requirement, why is it not in the framework
4 and why is the dredging of the Saginaw River taking
5 place prior to this framework and this agreement being
6 settled? Because if and when the dredging takes
7 place, that dredge spoil contaminated materials that's
8 coming from that upper Saginaw River is going to go in
9 a wetland and a floodplain within a quarter mile from
10 the Saginaw River. It will seep back into the ground
11 and go right back into the river and right back into
12 the Great Lakes. I compliment this lady that talked
13 about the gentleman that works actually at the MDEQ
14 that stated there's millions of dollars going to be
15 put forward to clean up the Great Lakes, and if we're
16 going to clean it up, let's clean it up right, and I'm
17 not pointing my finger at anyone in particular, but if
18 they're going to dredge the river, then why not wait
19 and settle what's taking place here on the
20 Tittabawassee, find out exactly what's in that upper
21 Saginaw River before they go put it in a floodplain
22 and wetland, and if that has to take place and that
23 does go within a quarter of mile from the Saginaw
24 River, why is someone not stepping up to the plate and
25 allowing geo tube bags to be put into that landfill

1 and why cannot a type two landfill be used instead of
2 just a slurry pit. Now I'm not quite sure if that's
3 what Dow Chemical is being responsible or who's
4 responsible for it, and I know there are many
5 contributors to what is in that upper Saginaw River,
6 and there are probably many contributors in the
7 Tittabawassee River, but all of that is flowing into
8 the Saginaw River, and all of that contaminated
9 material is going to be slurried into a field and into
10 a wetland and a floodplain, and it's just not right
11 what's taking place.

12 JIM SYGO: Well, while I don't disagree with
13 what you're stating in terms of the cleanup, the Corps
14 of Engineers along with Saginaw County and the Saginaw
15 River Alliance I believe they're called have a process
16 to look for a facility that would allow for the
17 dredging of the shoals that are created within the
18 navigation channel of the Saginaw River. When we
19 speak of the upper Saginaw River in terms of the
20 framework, we're referencing the area that's between
21 the confluence of the Tittabawassee down to the start
22 of the navigation channel, and that is something that
23 Dow is required to provide again a type of remedial
24 investigation type workplan, and I think it's due
25 March 1st, if I'm not mistaken, and as part of that,

1 they will be proposing work that could be done
2 particularly in that area of the river.

3 While that's being done, as I'm sure you know,
4 there continues to be evaluations by the Corps of
5 Engineers, Saginaw County, as well as the Department
6 of Environmental Quality in looking at not necessarily
7 putting these materials in a wetland and in the
8 floodplain but it would be into a facility that would
9 be constructed to contain those materials. Now as
10 again many of you know, recently we've received
11 information from the Corps of Engineers relative to
12 the hydrogeological study, and there does appear to be
13 some issues with the surface clays in that area, and
14 those are -- there are still discussions going on to
15 try to look at how resolution of those areas of the
16 clays that have sand streams in them can be
17 effectuated and corrected and whether that takes
18 excavation or whether it takes keying in dikes that
19 would be constructed for this facility down to a
20 deeper depth so that they can assure that no water
21 escapes that area.

22 What's referred to as the dredge material
23 disposal facility, the DMDF, is still something that's
24 continuing to be evaluated. It hasn't been completed
25 yet in terms of exactly what's going to be done.

1 There have been some approvals provided by the
2 Department relative to the floodplain permit and I
3 believe the wetland navigation permit which had been
4 challenged and I think there's also been a 301
5 certification -- I'm sorry, a 401 certification for
6 the discharge from that site, but at this point,
7 there's no operation plan -- operation and maintenance
8 plan that's been approved, and until such a plan is
9 actually approved, construction would not move
10 forward, is my understanding.

11 AUDIENCE MEMBER: That is not correct. What
12 we've been told, the excavation will take place
13 May 10th with or without the operational management
14 plan.

15 JIM SYGO: Well, until there's an operation
16 and management plan, I don't believe construction
17 would be a wise course of action, because some of the
18 items that you mentioned, such as the geo tubes, some
19 of the items I mentioned, such as the clay beneath the
20 area, still need to -- they need to evaluate how
21 they're going to engineer that site so that it will
22 contain the materials, and I know it's the Corps'
23 plan -- or it was their original plan anyway to begin
24 construction then. Whether that's going to happen or
25 not, we're not sure yet. We don't have an answer on

1 that yet. I think we've submitted --

2 AUDIENCE MEMBER: Well, apparently, you
3 don't know Jim Koski, Saginaw County Public Works
4 Department Commissioner, either, because he has every
5 intention of going forward with that excavation
6 project.

7 JIM SYGO: I do know Jim. I know Jim very
8 well. I've known Jim for a number of years. My point
9 in saying this is that the Department has committed
10 that until such time as we have an operation and
11 maintenance plan that was acceptable that the facility
12 would not move forward, even though there have been
13 some approvals for some of the permits that were
14 identified that needed to move forward for the
15 purchase of the land.

16 AUDIENCE MEMBER: May I ask one more
17 question? You keep addressing the fact that we need
18 to go on the website, so I did. I went on the
19 website. On your website, it talks about management
20 and disposal of dredge materials along the
21 Tittabawassee River which is within this remedial
22 investigation workplan. It states, the parties
23 understand and agree that Dow may propose dredge
24 material disposal options other than disposal in a
25 type two landfill, such as an engineered disposal

1 facility similar to confined disposal facilities, such
2 as the DMDF in Zilwaukee Township, used by the U.S.
3 Army Corps of Engineers to contain dredge materials.
4 Any disposal facility used by Dow must be operated and
5 maintained in accordance with applicable law. Now is
6 that a true statement? That's what I want to know.
7 Is Dow Chemical going to use that confined disposal
8 facility for dredging --

9 JIM SYGO: It doesn't say Dow will use that
10 facility. It says they may use a facility like that.

11 AUDIENCE MEMBER: They may. Where is the
12 other one that's --

13 JIM SYGO: If you let me answer the
14 question, I'd be glad to do that. The other option
15 would be for Dow to take a look and see whether
16 Saginaw County would allow for some materials to go in
17 there. I know there have been discussions relative to
18 whether that's a possibility or not. At this point in
19 time, until there's even a facility that is known --
20 that could exist at that particular site, we don't
21 know that it's fruitful to take those discussions
22 forward. That particular document was developed some
23 time ago actually and came out as part of the
24 framework. That is in the framework, in fact. So the
25 point of that was to indicate to Dow and accept the

1 concept that as opposed to dredging materials, drying
2 and solidifying sediments in some type of fashion at
3 some location and then transporting them to a
4 landfill, that the State would accept a facility such
5 as a dredge material disposal facility if it's
6 constructed consistent with what the State would
7 expect and what the Federal Government would expect to
8 contain such dredge materials.

9 CHUCK NELSON: I need to stop you there,
10 because this fella behind you is the last one.

11 MR. DAVID GARABRANT: David Garabrant,
12 University of Michigan. I just wanted to respond to a
13 couple of questions about the University of Michigan
14 study. First of all, it is not a health study. It's
15 an exposure pathway study. It will identify whether
16 people who live in the floodplain and near the
17 floodplain have higher body burdens of dioxins than
18 people in other areas far from the river, and it will
19 identify the exposure pathways by which those
20 differences are explained, if there are differences.
21 It is also a study of long-term residents. In order
22 to be included in this study, you must have resided in
23 your home for five years or more. The people in the
24 study have on average resided for far longer than five
25 years in their homes, and my last comment is we will

1 release the results of that study in August of this
2 year.

3 CHUCK NELSON: Thank you. I want to thank
4 you all for coming. The next meeting is Wednesday,
5 May the 10th, at 6:30. The rules will be similar to
6 this one. The folks from Dow, DEQ, other regulatory
7 agencies will be here by 6:00. They will stay for a
8 half an hour after, as they're going to tonight. So I
9 encourage you to take advantage of the folks staying
10 here, ask anymore detailed questions you have. Thank
11 you very much. We'll see you later.

12 (Deposition concluded at 9:07 p.m.)

13

14

15

16

17

18

19

20

21

22

23

24

25

1 STATE OF MICHIGAN)
2)
3 COUNTY OF SAGINAW)
4
5

6 I certify that this transcript, consisting of 113
7 pages, is a complete, true, and correct transcript of
8 the proceedings and testimony taken in this case on
9 February 9, 2006.

10

11 I also certify that I am not a relative or
12 employee of or an attorney for a party; or a relative
13 or employee of an attorney for a party; or financially
14 interested in the action.

15

16 February 17, 2006

17

Natalie A. Gilbert, CSR-4607, RPR

18

Notary Public, Saginaw County, MI

19

My Commission Expires: 8-10-06

20

21

22

23

24

25